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Royal Botanic Gardens
Melbourne

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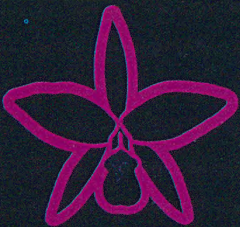


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From the Editor's Desk

The 21st Australian Orchid Council (AOC) Conference and Show will be held in New South Wales. "Orchids in the Foothills" will run from 18th to 22nd July 2018. The venue for the 2018 AOC Conference and Show, hosted by OSNSW will be held at the Windsor YMCA Stadium.

David and Patricia Hutchins have been successful orchid growers and exhibitors in New Zealand for the past couple of decades. They specialise in *Sarcochilus* hybrids and had 12 different plants awarded in 2015. Sadly David passed away in April 2016, aged 73, just a few weeks after writing the notes that appear in this issue. *Sarcochilus* Memoria David Hutchins, (Galaxy x Yvette) has been named and registered in his honour.

Roger Bedford, author of the 1969 book *A Guide to Native Australian Orchids*, passed away 13 May 2016, aged 87. He was dismayed at the scarcity of up-to-date reference books and eventually decided to write a book himself for growers and lovers of native epiphytic orchids, the result of extensive and lengthy research. Roger made the hybrid *Dendrobium* Peter (*falcostrum* x *fleckeri*) and the groundbreaking *Sarconopsis* Lavinia (*Sarcochilus hartmannii* x *Phalaenopsis amabilis*). Roger was one of the original members of ANOS Inc. He was one of our significant early native orchid hybridists and an original recipient of the special Ira Butler Award for 'Outstanding Achievement in Development of Australian Native Orchid Hybrids', back in 1977. He and I coined the term "Tropicools", for the increasingly popular hot/cold *Dendrobium* hybrids. I used that term in a note in *Orchids Australia* a couple of years before it was subsequently trademarked by a native orchid nursery. I last saw Roger at the St Ives Orchid Fair in August 2015. I was 12 when I first met Roger back in 1977, and he was always so helpful and enthusiastic. Another icon of Australian orchids has passed.

York Meredith passed away on 2 June 2016, aged 87. York was the proprietor of the famous Dos Pueblos Orchid Nursery on Sydney's northern beaches, and later as York Meredith Orchids that specialised in importing exotic orchid species from around the globe. Importing "wild" orchid plants was always looked upon as a double-edged sword. Regardless, York imported many different orchids into Australia that we would not have seen in real life without his contacts and vision. Many of these are still cultivated around the country today. Many do not know that York was central to the rediscovery of the amazing and mythical *Paphiopedilum sanderianum* in Borneo in the early 1980s. I well remember my Dad (as OSNSW Registrar) getting a phone call from York, telling him he was bringing a "very special orchid" to the OSNSW meeting that evening. *Paphiopedilum sanderianum* 'York' was awarded a Highly Commended Certificate (HCC) on that evening in October 1986.

This issue of the AOR is dedicated to the memories of David Hutchins (NZ), Roger Bedford and York Meredith.

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Cover Shot

Sarcochilus Lara

– grown by
David & Patricia Hutchins
from New Zealand.

(Photo: Michael Harrison)



Sarcophilus Sweetie



Sarcophilus Perky

Growing *Sarcochilus* Orchids in New Zealand

by David and Patricia Hutchins

We live in the North Island of New Zealand, on the East Coast, near the ocean around 3 hours drive north of Napier (good wine country!).

We have been growing orchids since about 1990, and started off with cymbidiums. We soon found that they took up too much room for us so we made a change to growing a smaller orchid which suited our space and growing conditions.

Shadehouses

Our first shadehouse, (known as our 'den house') measured 3.0m long and 2.5m wide but this soon grew to 9.5m long and 5.5m wide. The peak of the roof around 3.0m is not in the middle as this shade house was modified (quite a bit) and was added to several times to its present size. It has clear laserlite roofing and 75% shade cloth on the sides.

Our second shade house, known as the 'sarc house', use to be an aviary. It measures 9.5m long and 5.5m wide. The peak of the roof is around 3.0 m and comes off the shed as a lean to. Three sides are covered with 75% shade cloth and the roof is part clear laserlite and part cloudy laserlite. The south side where we get a lot of winds from has got laserlite for added protection. During the hot summer months some of this laserlite side wall can be removed to allow a free flow of air.

As the temperature rises during the summer months 75% shade cloth (approx) is secured inside both the shade houses under the roof.

The temperatures at the peak of the summer months, in our shadehouses can exceed 40°C while in the winter can get to zero degrees C, but fortunately we do not get many of these temperatures. For added cooler temperature control we sometimes add a product called Ali shade, this is woven aluminium strips.

Walkways are concrete pavers while under some of the benches ferns grow. Benches are made of steel tube and steel mesh. I believe that there are now more cost effective materials available which should be considered.

Air movement

Air movement is vitally important. Plants must be spaced out, giving plenty of room around each plant. We have a series of fans placed in each shadehouse which are thermostatically controlled or controlled through a temperature controller (these are two different items but work basically in the same way).

The 'temperature controllers/ thermostats' are set during the summer months around 24°C so as the temperature rises to this preset temperature, summer temperatures, the fans will come on thereby providing plenty of air movement.

During the winter, the winter mode is selected and the controllers are set at 3°C and the same fans come on to help ward off any of the frosts when the temperature drops to that level.

The electrics are on residual safety devices to prevent electric shock.

Watering

Sarcochilus are monopodial orchids that do not have any pseudobulbs so cannot withstand long periods without water. Keep an eye on the leaves; look for any change, such as shrivelling or crinkling of the surface of the foliage.

Our watering system consists of 3 programmable controllers, wiring between the controller and solenoids which are placed in the water lines, (for those who do not know what solenoids are, they are like an electric light switch turning a light on and off).

Using 3 only Hunter SRC 9 channel programmable controllers we can select the days we require the water to be on plus the length of time each "channel" runs plus water pressure can be maintained. So different areas can have more water than others. The channels have a 24vac output. (There will be other makes on the market). When the predetermined time appears on the clock then the selected channels will operate the 24vac valves one at a time for a predetermined time until all have finished and the selected areas watered, (the time of each channel can be from one minute up to ninety nine minutes and each channel can be different, there may be an area which requires more water than another).



Sarcochilus Perky

Each channel will run for the period selected and on the days or day required.

This is a good system when you go away on holiday or do not have much time.

In the summer water is applied (not in the heat of the day) about 3 times per week depending on the temperature and in the winter once every week or so depending on the temperature and climate at the time.

Since we retired we have been watering and feeding by hand, they may not get as much water in one time as on the automatic system, but can be watered more often, plus we can keep a better eye on the plants.

pH of the water

We do not worry about it, maybe I should, the sarcs and dendrobiums seem to be doing ok! This is something for the experts to talk about.

Misting

We have overhead misters which are controlled by time clock (so that the mister is not working very late in the afternoon) and thermostat (so that the misters will come on when the temperature gets to a certain level). There is also a relay which allows the water to come on for 1 minute every 10 minutes. This can be varied. Some orchid growers have the misters under the benches.

Feeding

We feed the *Sarcochilus* once or sometimes twice a week using fertiliser to a conductivity (strength) of 7 CF. There are several types on the market so just use the one which you find best for your needs. There are two lots, one is fed from February to August (NPK 16:3:27) while the other for growing is fed from September to January (NPK 22:5:18). We make it up to a higher strength in a 20 litre bucket adding a table spoonful

of maxi crop, plus a couple of healthy pinches of chelated iron (corrects iron deficiency) and Epson salts (for leaf colour), and then water down. We use a conductivity wand/truncheon which measures EC, CF and PPM. Each month all the plants are flushed with water to clear the salts from the medium. It is important to know what strength of fertiliser you are applying to your plants. There will be other fertilisers on the market – if yours works for you do not change it.

Heat

All of our plants are grown “cold” without any artificial or supplementary heating in winter.

Medium

We use clean NZ pine bark suitable for the *Sarcochilus* which is in between the medium bark and the bark used for cymbidiums. We use a mixture of one part of pumice or small stones and three parts of 8-12mm pine bark. It is worthwhile to soak the bark prior to potting on. Have you noticed how the water just runs through dry bark?

Repotting

Place the plant in a pot to suit the size of plant and its roots system – do not overpot the plant. Repot in the cool of the day so that the plant does not become stressed and do not forget to cut off any dead roots. If the plant needs splitting, be gentle and do not forget the new label. Repotting or potting on tends to send out signals to the plant that a new period has arrived.

We use a variety of pots – plastic, wooden slatted baskets to terracotta pots – just make sure that the pot will drain freely.

If your plant is just sitting there and does not seem to be growing, try repotting it, it may help. We repot all our seedlings each year, even if it is into the same pot, just the new mix can help them on their way, sometimes we can do this up to 3 times a year. The plant gets that idea it is a new season.





Bait

We use slug pellets and 'slug out' for the plants just deflasked. We use a varied number of bait holders, one being a soft drink bottle with the shoulder and neck cut off and turned around to fit inside the bottle, this will stop the snails from getting out, do not forget to put some slug bait in it. There is slug bait available which when it becomes damp does not go furry and become useless.

Things which we forget

Now that we are retired we shall start feeding with dolomite lime and dried blood in March and October, and depending upon the size of pot we will use half teaspoon around the top of the pot. The rafts will be soaked in a solution of lime and water.

Pots or Rafts

Some plants are best suited to rafts/mounts so research your plants. Many hybrids with high percentages of epiphytic parents fit this category. Rafts may take the form of natural cork, compressed cork, weathered hardwood, tea tree, jacaranda plus many others. You may have to secure a plant on several different types of mounts before the plant is happy. Remember rafts normally dry out very quickly so may require more water. Some of our rafts consist of plastic gutter guard made into a tube with a bottom and top. We have been filling them with wine corks. The roots weave themselves through the cork, sometimes the plant should be tied on with fishing line or something which will not rot away with time. You know the story, the label falls off the mounted plant before you know it.

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Pests

We spray for green fly, mealy bug and scale using Orthene, conqueror oil with water, another is Confidor. There will be other products on the market just as good. We also hang pest strips from the roof.



Sarcochilus
Burgundy on Ice
'Sunvale Sugar'

Young Rafts and Humidity

After one trip to Australia we placed under some of the benches some PVC spouting which we filled with water. Above this water we have strung a wire on which we hang our newly deflasked *Dockrilla* and some *Sarcochilus* species. It is cool and in the summer is relatively humid. This has helped most of the plants to get a head start with new roots coming away. A lot of these types of plants are suspended over creeks. Once they become established they are relocated. Heat may have an effect on the roots of small plants.

Shadehouse Visits

When you visit someone's shadehouse look around to see how they grow their plants. If it is different to the way you grow yours, can you improve on the way you attend to your plants? Is one of their plants growing better than yours, if so why – check it out - it may get the sun at a different time of day. What is placed where to catch the sun – how high up is the plant hung?

The Internet

"Surf the Net" sometime as there are plenty of sites out there which may help even if they are not the same genus of orchids. Pick up hints and see lots of images.

Seedlings

We can flower some of our *Sarcochilus* seedlings nine months out of the flask. We experiment with various medium mixes, at the moment we are using a mixture of very small bark and using a 20 litre plastic bucket fill with bark, soak, drain, add about ¼ volume of fine pumice plus the same as finely chopped sphagnum moss. Mix up well and you will find that the moss will take up the moisture making the total mix crumbly.

Sometimes if you have used just spag have you found that it stays really wet all the time and the plant in it does not move, it may be worth changing the medium.

Where did we obtain our *Sarcochilus* seedlings

We now do a lot of breeding with our own plants. We have bought most of our seedlings as flasks from a variety of growers and enthusiasts, primarily from Australia. Some of these were purchased over the years from David Butler, Ken Russell, Neil Finch, John Woolf, Colin Fitzsimmons and the late Neville Roper. All of the photos used in this article are from our own plants we have grown.



Sarcophilus
Highton Magic
'Sunvale Tiger'



Sarcophilus
Heidi
'Brookfield Beauty'



Sarcochilus
Weinhart



Sarcochilus
Cherie Snow



Sarcochilus
Sunvale Sunspot

Plants Kept

For us we keep the plants we like and they may not necessary be show plants. It's most important to grow what you like and not be influenced by the latest fads. We enjoy exhibiting our orchids, and in 2015 we had 12 plants awarded.

Orchid Clubs & Societies

If you do not belong to an orchid club then consider joining one, there is a wealth of information to be shared and acquired between the members.

Conclusion

Remember what suits us may not suit you; you may have to refresh your potting mix, relocate the plant to another location in the shadehouse maybe to get the morning sun. Sometimes growing any orchid is not easy, but can be made easier if you read up about your plant, observe the lush growing of that plant in someone else's shadehouse and see how they are growing it. Again if your plants are doing well do not change anything. Share information because the time will come when you need to know something, plus I believe it makes you feel happier.

Happy growing.

David and Patricia Hutchins
Gisborne, New Zealand
Email: dphutchins@xtra.co.nz
March 2016

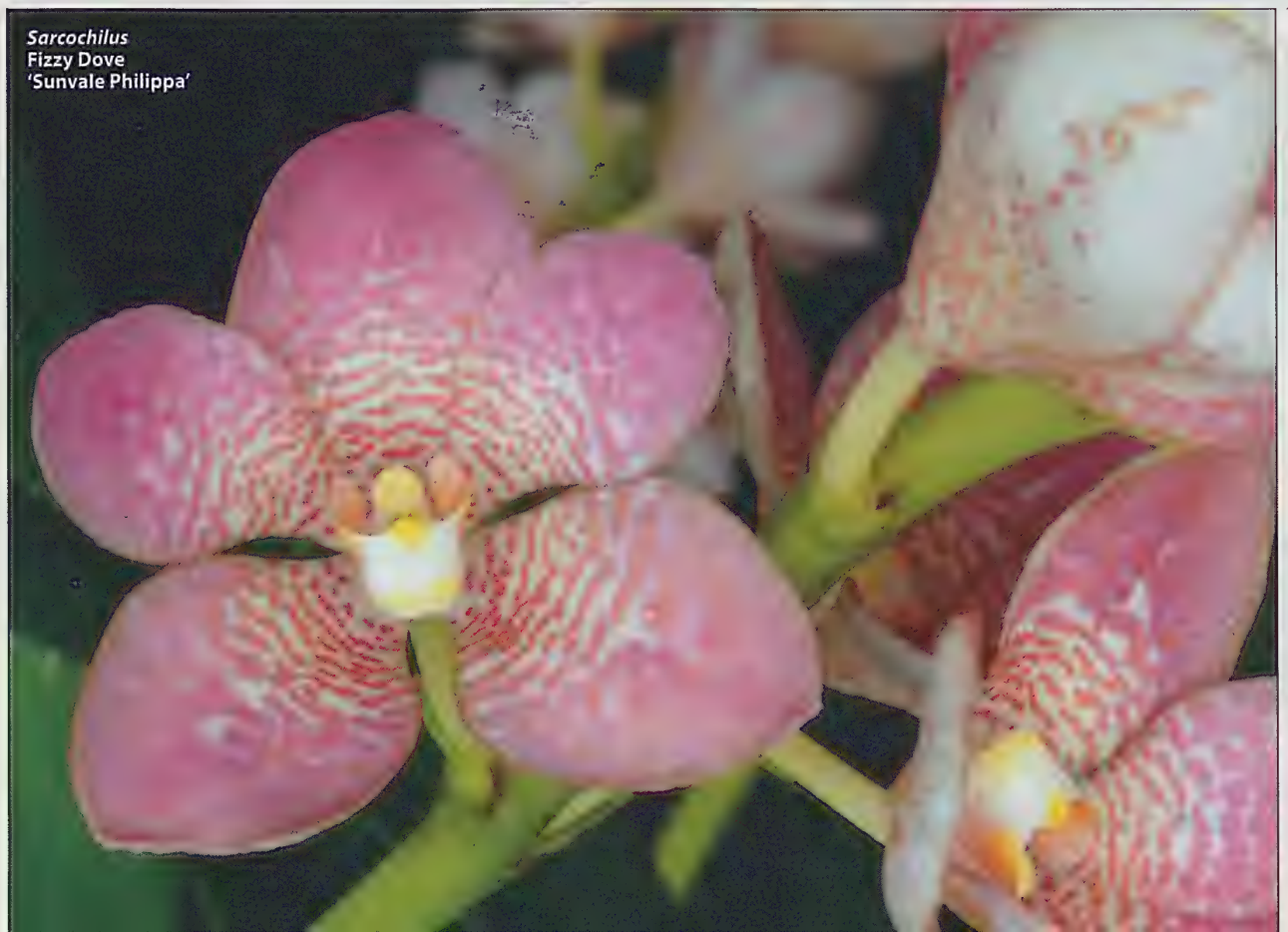
Editor's Note: It is with profound sadness to report that David Hutchins passed away a month after writing these notes, aged 73. This article is part of David's legacy. He had been unwell for the past 12 months or so but gained enormous enjoyment and strength from his orchid collection, especially his *Sarcochilus*. David Hutchins was born 29th May 1942 and passed away 14th April 2016. In May 2016, his wife Patricia registered one of the favourite crosses David made, being *Sarcochilus* Memoria David Hutchins, a cross between *S. Galaxy* and *S. Yvette*. Our sincere sympathies and condolences to Patricia and their extended family and friends. This issue of the *AOR* is dedicated to his memory and is a tribute to his contribution to orchids in New Zealand. **DPB**



Patricia &
David
Hutchins



Sarcochilus
Verolica
'Sunvale Spots'



Sarcochilus
Fizzy Dove
'Sunvale Philippa'



Sarcochilus
Harmony
'Sunvale Ruth'



Sarcochilus
Fizzy Dove
'Sunvale Giant'

SARCOCHILUS SPECIES AND HYBRIDS

Allen-Ikeson, Jean. 2011

Published by the American Orchid Society as a supplement to Volume 80 of *Orchids – The Bulletin of the AOS*.

This is a handy guide to the cool growing Australian *Sarcochilus*. Descriptions of the species and their uses in hybridising are included along with information on how to grow *Sarcochilus*.

139 colour photographs.

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'Sunvale Patricia'



Sarcochilus
Morning Glory
'Sunvale David'





Sarcochilus
Lara
'Sunvale Annette'

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Jester
'Sunvale Beverly'



Sarcochilus
Gerroa
'Sunvale Pixie'

Cymbidium Pendragon 'Broadmoor' A Knight's Quest

by Graham Guest

When we first began to assemble a *Cymbidium* collection in the late 1970's, King Arthur and the Knights of the Round Table featured prominently as the names of the most desirable hybrids of the day. Prizes were won at monthly meetings of the Orchid Club of South Australia with *Cymbidiums* King Arthur, Excalibur, Gareth, Geraint, Pelleas, Percival, Dinadan, Bedivere, Lancelot, and Pendragon. Other than in a few select collections, most don't exist anymore, though for some, their genes continue to be expressed in modern day hybrids.

It was 1975 that a division of the original mother plant *Cymbidium* Pendragon 'Broadmoor' was imported from the Rowland Collection, USA. The enthusiast was Leon Connor, and the plant accompanied him on his return flight back to Australia as part of his luggage. Leon attended the Santa Barbara International Orchid Show each year, and always returned with some choice selections. It was a time when Quarantine and CITES restrictions didn't exist in the rigorous manner of today.

In 1979 we visited Leon at his Orchidland shadehouse and Rite Lite Glasshouse in Port Pirie. As enthusiastic beginners we were awestruck by a 12 inch pot of Pendragon, an intermediate with eight spikes, each with 35 plus cream blooms. Leon in his own generous way said if you like it, have a few mericlones. These were greatly valued, and to our surprise all produced spikes the following year.

It flowered in late May, and was clearly far superior to any other plant in our collection at the time. Looking around our flowering house, the only other plant in bloom was the standard albino *Cymbidium* Melinga 'Highbury', and without any great thought we pollinated Pendragon. This was our very first hybrid, and in true Pendragon super fertile fashion, a seed pod and subsequently seedlings were produced.

Flushed with seed raising success, the creative bumble bee in us took over. On reflection Pendragon was mated with practically anything in flower, without any great thought given to the plants' perceived strengths and weaknesses.

In 1983 Sue and I met Andy Easton during one of his visits to South Australia. He was aware of our enthusiasm for Pendragon, and offered some sage advice, identifying flaws in the plants make-up that we would be wise to take into

account should we continue with this line of breeding. In that context, our advice to all aspiring orchidists is to seek a mentor, a grower with a proven track record, for both culture and exhibition. You will save yourself considerable heartache, and probably a lot of dollars. On reflection, Guest Orchids owes much of its success to our fortunate relationship with Easton, a hybridiser who has set new standards continually over a 50 year span.

So what were the flaws in *Cymbidium* Pendragon?

- Offspring characterised by hoary growth, big bulbs, elongated foliage
- Hybrids in the main tend to be sterile aneuploids
- Dull, muddy colours in a high percentage of offspring. Interesting enough, show judging adapted to these new types, and the colour category of Biscuit was

introduced. In hindsight not a clever undertaking

- Sluggish plant growth, typically one bulb, one lead, one back bulb unless the very best in culture is provided
- Shape of flower slightly hooded, petals slightly forward facing

Nonetheless *Cymbidium* Pendragon possessed outstanding attributes worth considering. It produced a mass of flowers, over 30 on a strong raceme, and the flowers had remarkable longevity. Typical shelf life was up to 90 days in cool conditions.





Furthermore, it was tantalising to imagine showy whites for Mother's Day, early May in the southern Hemisphere.

The Showbench

In our early days the pursuit of showbench types was our number one goal. Our first major success was our awarded *Cymbidium* Artistic Impression 'Snowdrop'. A 1990's creation, it still won a champion sash last year. Andrew Koch deservedly received Champion sashes last year for his flowering of this clone (he kindly provided the included

photographs). Our next standout was *Cymbidium* Anna Dragon '105', a nice marriage with Geyserland Orchids champion intermediate *Cymbidium* Anna Szabo 'Geyserland'. But as the years rolled on and we emerged in the commercial sector, the focus of our Nursery has become sharply oriented as premium suppliers of decorator pot plants. We were aware Showbench types in the main didn't meet our expanded and more exacting standards. With respect to Pendragon those foliage faults hadn't been addressed. If we were to continue with the line, it was evident the way forward required an infusion of miniature characteristics. This we have done in a limited fashion, through the use of hybrids derived from the species *ensifolium* and *pumilum*.

Outcome

Cymbidium Pendragon 'Broadmoor' is rarely seen today, and those that we have seen are inferior mutated clones of the original (a common outcome for many great plants from the past).

We have quietly plodded along with the line, making a few selected crosses with plants that offer potential remedies for plant growth and colour. Our stated primary goal has been to achieve modest foliage and the ability to create a bush, lots of bulbs, and fine elegant leaves.


There was also the issue with colour. *Cymbidium* Pendragon being a cream with a propensity for sun staining, our centre of attention has been clear colours, in particular crystalline white. Mother's Day demand for clean white orchids has always been high, and naturally has always been at the forefront of our endeavours.

Back in the 1990's our awarded standard white *Cymbidium* Fair Delight 'Polar Bear' offered the colour we were after, though we were aware the issue of foliage wouldn't be addressed in just one generation. No short cuts, we were aware this would be a long haul project. Fortunately with *Cymbidium* Bridal Fair '105' we unearthed a nice stepping stone in the quest to our ultimate objective. This plant gave us improved plant growth and clean white colour, though the trap was that we had in our possession a plant dominant in hooding and cuppiness.


Forever seeking improvement, we then placed our faith in *Cymbidium* Dolly's Summer '105'. This plant was from a batch of Andy Easton hybrids, and seemed an ideal match, dainty and fine foliage. It is fair to say that after 30 years we have this year witnessed the emergence of seedlings that fulfil our criteria of modest foliage and clean colour. A selection of our recent seedlings follow. The journey has been long, and slow. It could have easily been a project easily dismissed, but with persistence in selecting the right genetic material, the outcome has been especially satisfying. The excitement when these new types first flower is one of the principal reasons we gain so much pleasure from our hobby and business.

Graham Guest
Guest Orchids

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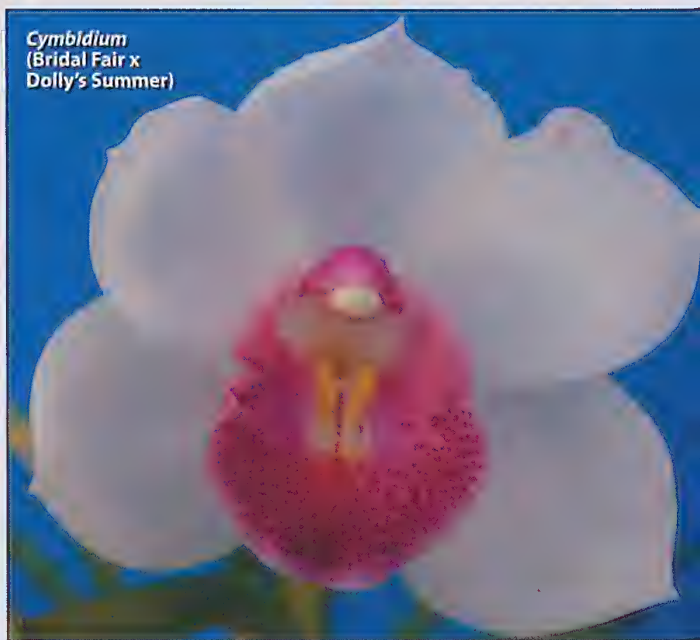
AOR 126



Cymbidium
(Bridal Fair x
Dolly's Summer)



Cymbidium
(Bridal Fair x
Dolly's Summer)
'April 2016'



Cymbidium
(Bridal Fair x
Dolly's Summer)

Cymbidium
(Bridal Choice x
Dolly's Summer)



Cymbidium
(Bridal Fair x
Dolly's Summer)



Cymbidium
Winter Love
'Delwynne'

Cymbidium hybrid orchids – Made in New Zealand

Text and photos by Dave & Nancy Beck

New Zealand, a small country in the southern Pacific Ocean, is well-known for a range of reasons: it is green, nuclear free, has more sheep than people, is home to the Lord of the Rings, and protects the whales. But flower growing? Actually, for a country with only 4.5 million inhabitants, New Zealand is a relatively major food, fibre and flower producer on the world markets. The types of flowers which we export are all high value and produced during off-season for Northern Hemisphere producers. The largest of the flower export groups is *Cymbidium* Orchids.

Who is a typical New Zealand grower?

There are 40 commercial *Cymbidium* orchid producers, growing either standard or mini cymbidiums. Many properties consist of a husband and wife team who do the majority of the work themselves, hiring in a person or two during the peak season for 3 to 4 months. Property sizes are quite small by world standards – the largest producer in the country has a greenhouse area of under 8 acres.

In New Zealand parlance, orchid growers are often referred to as “life style” producers. We are small businesses, employing a few staff; we live on our properties, and are very hands-on in the business. We are proud of our product, and put in the time and effort to make sure our flower stems are high quality.

This is one of the things which make New Zealand flowers different. We compete with major producers on the basis of our quality as well as our seasonality. One of these quality

trademarks of New Zealand flowers is that they have vibrant colours. This is a result of careful selection of modern cultivars, the intensity of our sunlight, access to pure rainwater supplies, and a temperate climate. This last is the key to successful *Cymbidium* production – the New Zealand climate is well-suited for this crop.

Cymbidium production areas are all in the North Island: Northland, around Auckland, and the Bay of Plenty. Northland is known as the “winterless North”, with very mild winter temperatures and dry, sunny summers. Most of these properties are less than an acre, have no heating systems, and growing houses are home-built wooden structures with single- or twin-skin plastic coverings. Auckland is home to several of the largest production areas, 2 acres and more. Greenhouses are high-tech glass or plastic commercially-built structures, with computer-controlled environmental and fertigation systems. Growers in the Bay of Plenty are, again, more life-style than full-on commercial, with small production areas and relatively simple structures.

Excellent growing conditions (e.g. high sunlight hours; pure, clean air and water; temperate temperatures) has resulted in high production, high quality crops. This is a crop in which mechanism is minimal – and hand-labour is quite intensive. Spikes are directed towards an overhead crop-support wire by the attachment of a lycra string; over the next 10-12 weeks this spike will be handled an average of once each week to ensure the spike is straight and strong.

Flowering spikes are harvested when all flowers are fully open, a slow and careful process to ensure the blooms are not damaged. Packaging can be extensive as the flower boxes are literally shipped across the world. 95% of the New Zealand *Cymbidium* crop is exported, with Japan and North America being the two biggest markets.

The industry is supported by a grower organisation, the New Zealand Export Growers of Orchids (NZEGO) and several companies which market and sell product into international markets, the New Zealand Flower Exporters Association (NZFEA). NZEGO provides information and support for its members (90% of the production base), including field days, mentoring to new growers, and a Best Practice manual which contains general and specific production information. This manual has extensive information and images on pests, diseases, viruses; chapters focus on integrated pest management techniques, and provide details on how – and why – to use biological controls to combat major pests. NZEGO and NZFEA work together to deal with market specific issues such as labelling, market access, quality control, etc.

Seasonality.

Cymbidium cultivars can be loosely categorised as early flowering (May–July), mid-season flowering (July–August), and late-season flowering (September–November). Some cultivars will bloom over this entire period, while other cultivars may have a more synchronised bloom event, with all the stems maturing within a 3-4 week period. This means that a particular cultivar may be available for sale for only a limited period of time. *Cymbidium* Winter Love ‘Delwynne’ is an example of a cultivar which has a synchronised bloom event – all these stems will be harvested within a 4 week period.

The year is divided into several plant management periods. Intense spike stringing occurs from April/May through into September. Peak harvesting is from July/August into September/October. At the end of harvesting, works shifts into repotting and splitting plants. Minimal work occurs in

the greenhouses over the hottest summer months of December and January. In the New Year, before spiking starts again, it is a chance to deal with infrastructure issues such as greenhouse maintenance, weeding, repairs, etc.

Flower stem management.

A high-value, export-quality flower stem must be straight, strong, with flowers evenly spaced and free of blemishes. This requires a significant amount of hand labour, with each stem manipulated by hand at least once each week, for up to 10 weeks. The main technique used is called “stringing”.

When flower spikes are approximately 15-20cm long, an elastic string is attached at or near the base of the stem. The string is wrapped around the stem and pressure applied to force the stem to grow upright. The string is attached to an overhead crop-support wire by using plastic clips or by tying it on. As the spike grows, the string is wound around the stem and pressure used to ensure vertical, straight growth. Optimally, each and every spike is examined and their strings adjusted every 5 to 9 days.

Once the flower head has emerged from its protective sheath, another string is attached to a lower bud using a hook at the end of the string to make sure the flower head also grows straight – this is called “hooking”. The second string can be identical to the first or lighter, or optimally, a constant tensioning device. Care must be used to avoid damaging the flowers during stringing. Typically the hook is attached to a lower flower bud and then moved up the flower head as the buds mature. You will note the strings on the crop of *Cymbidium* ‘Alice Anderson 49^{er}’, a late season green. At this stage, all the spikes have been strung, and the worker is just making sure that all the flowers are not tangled and the stems are straight.

Pests and diseases.

Pests and diseases can be divided into those which cause direct damage (e.g. attack the flower and result in visible damage) or indirect damage (e.g. attack the plant and reduce plant vigour). An additional category are issues which cause



Cymbidium
‘Alice Anderson 49^{er}’

economic harm because they are present in the flowers, thus becoming a phytosanitary issue for exported flowers.

Flowers can be directly damaged by aphids, thrips, caterpillars, snails, mice, bumblebees and birds. Botrytis is a fungal disease which attacks flowers and can result in unsaleable product. Any of these can also result in phytosanitary issues if they are found by import authorities. This category also includes spiders. Direct damage pests can be controlled through a range of methods: exclusion (birds and bumblebees), computer manipulation of the greenhouse environment (Botrytis), bait (mice), agrichemical applications, and biological control organisms.

Indirect damage to the plant which results in reduced plant vigour is caused by two-spotted mites and scale insects. Both of these can also cause phytosanitary damage as they will move up onto the flower spikes if in high population numbers. Control of these two pests usually involves some combination of environmental controls, biological controls, and agrichemical controls. Viruses cause mostly indirect damage by reducing plant vigour, but can also cause direct damage, resulting in flowers with spots or colour streaks.



Grown in New Zealand.

We are a small country at the bottom of the world. Our closest neighbours, Polynesia and Australia, are more than 1000 miles distant. Our landscape is relatively unpopulated, with over one-third of the population located in Auckland. What we do have in plentiful supply is beautiful production land – good rainfall, good soils, and good sun. New Zealand packs a punch in the horticultural and agricultural production figures. Food and fibre exports are major contributors to the economy. And *Cymbidium* flower production is part of this. 95% of the *Cymbidium* stems produced are exported; these stems are sold in over 40 countries. We growers are small in number, but through our industry body, NZ Export Growers of Orchids, we work together to ensure we provide a high quality product. We are rightfully proud of our flowers, of their quality and beauty.

[Dave & Nancy Beck own **West Coast Orchids**, one of New Zealand's most productive *Cymbidium* cut flower nurseries. They are also heavily involved in research and the development of new *Cymbidium* colour forms and traits.

These will be discussed at the 2016 Orchid + Flower Show www.orchidplusflowershow.co.nz held on 22nd – 25th September, 2016 in Greenlane, Auckland, New Zealand.] ■

Dave & Nancy Beck
West Coast Orchids
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Three New Species in the *Diuris corymbosa* Lindley Complex (Orchidaceae) from Western Australia

by David L. Jones and Christopher J. French

Abstract

Three new Western Australian species of *Diuris* related to *Diuris corymbosa* Lindley from subgenus *Hesperodiuris* section *Suffusae* are described as new.

Key Words

Orchidaceae, *Diuris brachyscapa*, *Diuris cruenta*, *Diuris porphyrochila*, new species, *Hesperodiuris*, *Suffusae*, Western Australia, Australian flora.

Introduction

Continuing studies into a complex of species surrounding *Diuris corymbosa* Lindley in Western Australia have revealed a number of new taxa. Seventeen of these have been formally named (Jones 1991, Jones & French 2012, Jones & French 2013a, 2013b, 2013c, 2016, French & Brockman 2013). Three more species are described here as new.

Materials and Methods

Descriptions of the new taxon were made from fresh specimens. Unless otherwise indicated, all types of *Diuris* relevant to this study (or photographs thereof), and collections cited, have been seen by us.

Taxonomy

1. *Diuris brachyscapa* D.L.Jones & C.J.French, sp. nov.

With affinity to *Diuris corymbosa* Lindley but plants generally shorter (mostly to 30 cm tall), with fewer flowers (*D. brachyscapa* up to four flowers, *D. corymbosa* up to eight), smaller flowers (18–28 mm across cf. 25–35 mm across in *D. corymbosa*), pale yellow to yellow flowers heavily marked with brown cf. bright yellow, brown and purple flowers in *D. corymbosa*), and a narrowly wedge-shaped labellum 4–7 mm wide with a very narrow base (broadly wedge-shaped, 9–12 mm wide in *D. corymbosa* with a broad base).

Type: Western Australia. Kweda North Road, 3.3 km south of Brookton Hwy, C.J.French 5451 (ORG156), 11 Aug. 1996 (holo CBG 9707824).

Illustration: Brown, Dixon, French & Brockman (2013), Page 217, as *Diuris* sp. “western wheatbelt”. It has the phrase name *Diuris* sp. Western Wheatbelt (G.J. Keighery & N. Gibson 6951) in FloraBase, the native plant database maintained by the Western Australian Herbarium, Department of Parks and Wildlife, Government of Western Australia.

Description: Leaves two or three, linear to linear-lanceolate, 12–25 cm long, 8–12 mm wide. Scape 15–30 (–40) cm tall, one-four-flowered. Pedicels 20–40 mm long. Flowers porrect, 25–35 mm long, 18–28 mm across, pale yellow to yellow with brown to red-brown markings, the exterior surface of all segments stained or marked with brown; petals unmarked, dorsal sepal heavily marked with brown, commonly with a yellow central area, labellum lobes heavily marked with brown or red-brown, lateral sepals brown with green tips. Dorsal sepal ovate, 4–8 mm long, 7–11 mm wide. Lateral sepals deflexed, crossed, recurved, narrowly oblong, 11–18 mm long, 2–3 mm wide, slightly falcate. Petals obliquely erect, close or divergent, 13–20 mm long; claw linear, 3–5 mm long, 1–1.2 mm wide, straight or curved, brown; lamina elliptic, 10–15 mm long, 5–10 mm wide. Labellum 5–8 mm long, porrect with a decurved apex, deeply 3-lobed; lateral lobes spreading widely, tips straight or slightly recurved, asymmetrically oblong, 7–9 mm long, 3–5 mm wide; mid-lobe flattish to convex, the margins shallowly downcurved, narrowly cuneate when flattened, 4–6 mm long, 4–7 mm wide, very narrow at the base then flared, apex shallowly notched. Labellum callus consisting of a single yellow ridge 3–4 mm long, smooth. Column porrect from the end of the ovary, c. 4.5 mm long, c. 3.5 mm wide. Column wings oblanceolate, c. 4.5 mm long, c. 1.5 mm wide, cream with irregular margins. Anther narrowly ovate, c. 3 mm long, c. 2 mm wide, cream with purple-brown markings. Pollinarium c. 3 mm long, c. 2 mm wide. Stigma cordate to quadrate, c. 3 mm long, c. 2.2 mm wide. Capsules not seen.

Distribution and ecology: Inland from the coast more or less between Westdale south to Katanning and east to Lake King/Ravensthorpe, more or less bound by the Albany Highway and the Great Eastern Highway. Grows in Sheoak thickets, open forest and woodland, including Wandoo woodland, with a grassy or shrubby understorey, on granite rocks and shrubland. Soils include a range of well-drained sands and laterite. It forms large clonal colonies and often colonises disturbed sites, especially road verges. Flowers freely in the absence of fire. Alt. 200–350 m. Flowering period: late July to September.

Recognition: Characterised by generally short habit (most plants 30 cm tall or less), up to four flowers in the raceme, smilish pale yellow to yellow flowers with brown to red-brown markings and the lateral sepals crossed and often recurved beneath the labellum.

Similar species: In the north to north-western part of its range *Diuris brachyscapa* overlaps with *D. corymbosa* in the Westdale/Brookton/Beverley area but *D. corymbosa* is taller growing with much more colourful flowers and elongated petal laminae. In the western part of its range, south of Perth, it overlaps with *D. porrifolia* which has slightly smaller flowers with narrower elongate petal laminae and the lateral sepals tend to project straight down beneath the labellum.

In the north-eastern to eastern part of its range there is potential overlap with *D. hazeliae* which has more numerous, larger, bright yellow flowers with a larger and broader dorsal sepal.

Notes: *Diuris brachyscapa* is abundant over a very large distribution range making it probably the most common taxon within the *D. corymbosa* group in Western Australia. A similar, small-flowered taxon found between Salmon Gums and Norseman may prove to be distinct given further study.

Conservation status: Widespread, common and conserved in National Parks and reserves.

Etymology: From the Greek *brachys*, short and *scapus*, stem, in reference to the generally short habit of this species when compared with *D. corymbosa*.

Selected specimens: Western Australia. Bees Rd, 8.7 km W of Babikan, 1 Sep. 1996, *C.J.French* (CJF-080) (CANB); Quaraiding, 1 Sep. 1996, *C.J.French* (CJF 082) (CANB); Dale-Mawson Rd, 16 km from York - Quaraiding Rd. Correr Brook crossing, 1 Sep. 1996, *C.J.French* (CJF 084) (CANB); West Dale Reserve. Brookton Hwy, 1.1 km east of Old Beverly Rd, 1 Sep. 1996, *C.J.French* (CJF 085) (CANB); Dragon Rocks Nature Reserve, c. 12 km SW of Pingerling-Varley road on track off Dragon Rocks road, 30 Jul. 1994, *C.J.French* (DLJ 13153) (CANB); Brookton Highway, 24.6 km W of Corrigin, 20 Aug. 1995, *C.J.French* (DLJ 14254) (CANB); Carolling Road Reserve No. 8486, ex gravel pit, Beverley, 2 Sep. 2003, *T.Watson* 446, (PERTH); Newdegate Townsite, near Tennis Club, 24 Sep. 2001, *A.M.Coates* 4562, (PERTH); McGlinn Nature Reserve, Lake Grace Shire, 17 Sep. 2001, *A.M.Coates* 4550, (PERTH).



Diuris brachyscapa
Yillamining Rock,
September 1977



Diuris brachyscapa
Kweda Nature Reserve,
September 2015



Diuris brachyscapa
Weam Nature Reserve,
August 2010



Diuris brachyscapa
Qualtrading,
September 2007

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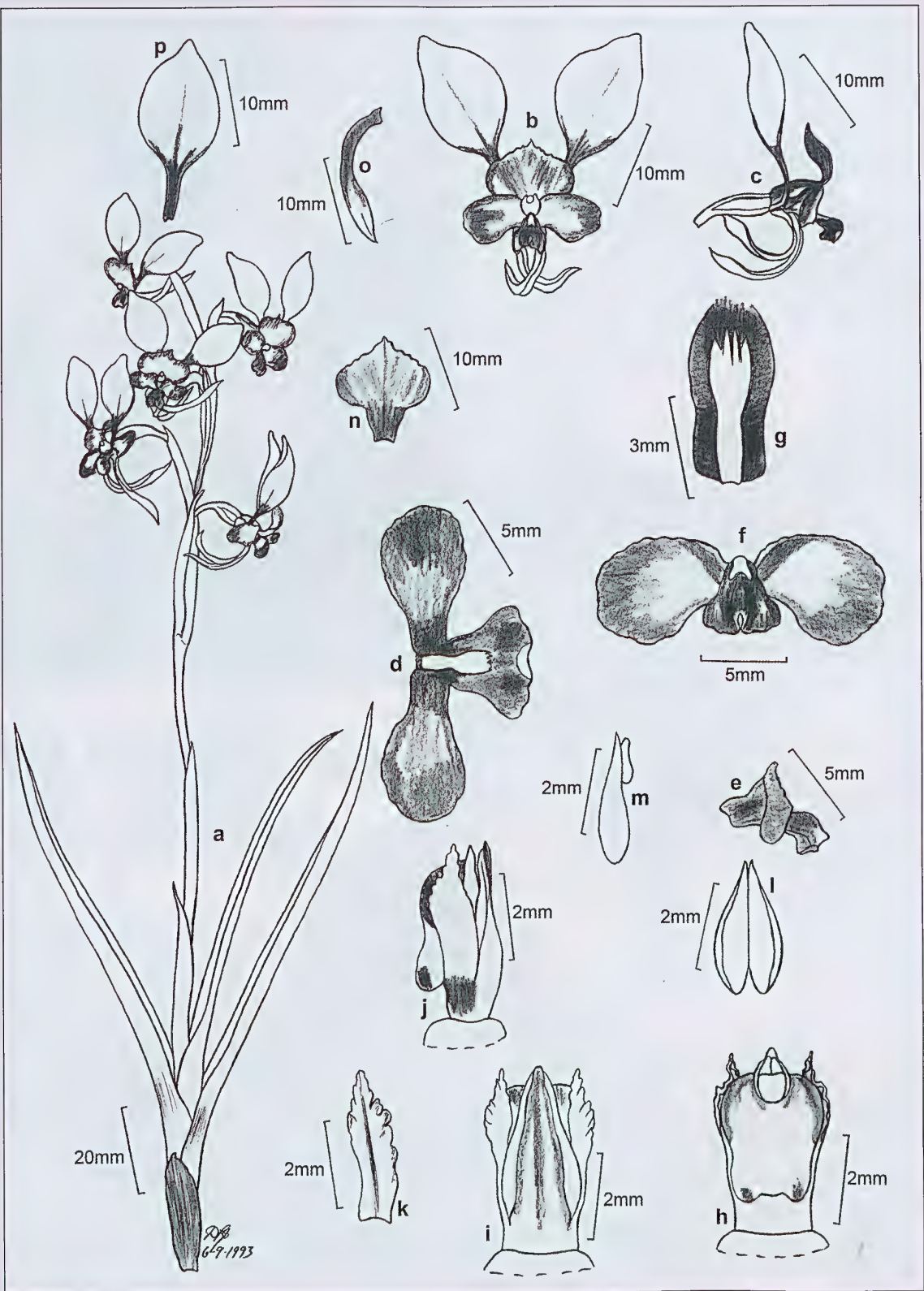


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***Diuris brachyscapa*, Brookton Hwy, 110 km east of Perth, C.French.**

a. flowering plant; b. flower from front; c. flower from side; d. labellum from above, flattened; e. labellum from side; f. labellum from front; g. callus; h. column from front; i. column from rear; j. column from side; k. column wing; l. pollinarium from above; m. pollinarium from side; n. dorsal sepal; o. lateral sepal; p. petal.

Fig. 1. © D.L.Jones 6 September 1993

2. *Diuris cruenta* D.L.Jones & C.J.French, *sp. nov.*

With affinity to *Diuris tinctoria* D.L.Jones & C.J.French but plants generally shorter (to 40 cm tall, *D. tinctoria* to 60 cm tall), smaller flowers (25-30 mm across *cf.* 30-40 mm across in *D. tinctoria*), flowers pale yellow to yellow with red to red-brown markings wholly lacking any purple colouration (pale yellow heavily suffused with light brown, yellow towards the centre of the flower with occasional trace of purple in the labellum callus in *D. tinctoria*). It also has affinities with *D. corymbosa* Lindley which has larger bright yellow, brown and purple flowers.

Type: Western Australia. Darling District. Devlin Road, 1 km south of Marriott Road, Kermerton, 26 Aug. 1995, C.J.French (*D.L.Jones 14263*) (holo CANB 626530; iso MEL, NSW, PERTH).

Illustration: Brown, Dixon, French & Brockman (2013), Page 213, as *Diuris* sp. "Kermerton".

Description: *Leaves* two or three, linear to linear-lanceolate, 10-15 cm long, 7-10 mm wide. *Scape* 25-40 cm tall, one-seven-flowered. *Pedicels* 20-40 mm long. *Flowers* porrect, 25-35 mm long, 25-35 mm across, pale yellow to yellow with red to red-brown markings, the exterior surface of all segments stained or marked with red-brown; petals yellowish-brown, dorsal sepal heavily stained with red-brown, commonly with a yellowish central area, labellum lobes heavily marked and stained with red or red-brown, lateral sepals brown with green tips. *Dorsal sepal* transversely ovate, 6-10 mm long, 9-14 mm wide. *Lateral sepals* deflexed, crossed, recurved, narrowly oblong, 14-20 mm long, 2-3 mm wide, slightly falcate. *Petals* obliquely erect, divergent, 13-20(-24) mm long; claw linear, 3-5(-7) mm long, 1-1.5 mm wide, straight or curved, brown; lamina elliptic to broadly elliptic, 10-15(-18) mm long, 8-12 mm wide. *Labellum* 7-10 mm long, porrect with a decurved apex, deeply 3-lobed; lateral lobes incurved to spreading, asymmetrically oblong-ovate, 7-10 mm long, 4-6 mm wide; mid-lobe convex, the margins downcurved, broadly cuneate when flattened, 7-10 mm long, 7-9 mm wide, narrow at the base then flared, apex shallowly notched. *Labellum callus* consisting of a single yellow ridge 3-4 mm long, smooth. *Column* porrect from the end of the ovary, c. 4 mm long, c. 3.5 mm wide. *Column wings* oblanceolate, c. 4 mm long, c. 1.7 mm wide, cream with irregular brown margins. *Anther* narrowly ovate, c. 3.5 mm long, c. 2.5 mm wide, cream with purple-brown markings. *Pollinarium* c. 3.2 mm long, c. 2 mm wide. *Stigma* cordate to quadrate, c. 3.5 mm long, c. 2.5 mm wide. *Capsules* not seen.



Diuris cruenta
Riverdale Nature Reserve,
September 2004

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A photograph of several Diuris cruenta flowers. The flowers are a mix of orange and red, with some showing darker, almost black, markings on the petals. They are arranged in a cluster, with some flowers in full bloom and others as buds. The background is dark, making the colors of the flowers stand out. The stems are thin and green.

Diuris cruenta
Kemerton,
August 1995

Distribution and ecology: Coastal areas from Lake Clifton to Capel. Grows in well-drained sand in *Banksia* woodland. Also recorded from moist soil near winter-wet areas. Alt. 10-100 m. Flowering occurs late August to October.

Recognition: Characterised by pale yellow flowers lacking any purple colouration, with red to reddish-brown markings in the dorsal sepal and labellum, the labellum lateral lobes yellow at the base with reddish to red-brown tips the midlobe mostly red to red-brown.

Similar species: The range of *Diuris cruenta* overlaps that of *D. magnifica*, *D. tinctoria* and *D. porphyrochila* (described below), which all have taller scape and more colourful flowers. Both *Diuris magnifica* and *D. tinctoria* have larger flowers than *D. cruenta*.

Notes: Flowers without fire but is more easily seen in burnt areas.

Conservation status: Uncommon, with restricted distribution but conserved in Yalgorup National Park.

Etymology: The Latin *cruentus*, stained or spotted with blood, in reference to the floral colour patterns.

Other specimens: Western Australia. Wellesley North Road, opposite Wellington Road, near Brunswick Junction, 26 Aug. 1995, C.J.French (DLJ 14268) (CANB); Johnston Rd, 300m E Old Coast Rd, 17 Sep. 1995, C.J.French (CJF 5090) (herb. C.J.French).



Diuris cruenta
Bunbury,
September 1993



Diuris cruenta
Bunbury,
September 2013

3. *Diuris porphyrochila* D.L.Jones & C.J.French, sp. nov.

With affinity to *Diuris tinctoria* D.L.Jones & C.J.French but differing by its smaller (20-30 mm across compared with 30-40 mm for *D. tinctoria*) colourful yellow flowers with brown to red-brown and purple markings (*D. tinctoria* with pale yellow flowers heavily suffused with light brown with only an occasional trace of purple in the labellum callus).

Type: Western Australia. Big Rock, Wellington Dam, Lennard Drive 1.4 km from Falcon Road, 21 Sep. 1997, C.J.French 830 (holo CANB 668688; iso MEL, PERTH).

Illustration: Brown, Dixon, French & Brockman (2013), Page 218, as *Diuris* sp. "Yalgorup".

Description: *Leaves* two or three, linear to linear-lanceolate, 10-20 cm long, 6-10 mm wide. *Scape* 15-60 cm tall, one-eight-flowered. *Pedicels* 20-40 mm long. *Flowers* porrect, 25-35 mm long, 20-30 mm across, yellow with brown to red-brown and purple markings, the exterior surface of all segments stained or marked with brown; petals yellow stained with brown, dorsal sepal heavily stained with red-brown, commonly with a yellow central area near the base, labellum lateral lobes yellow with red-brown or purplish tips, midlobe purple, lateral sepals brown with green tips. *Dorsal sepal* transversely ovate, 8-12 mm long, 12-16 mm wide. *Lateral sepals* deflexed, crossed, recurved, narrowly oblong, 14-22 mm long, 2-3 mm wide, slightly falcate. *Petals* obliquely erect, divergent, 15-22 mm long; claw linear, 3-5 mm long, 1-1.5 mm wide, straight or curved, brown; lamina elliptic to broadly elliptic, 12-17 mm long, 8-13 mm wide. *Labellum* 7-13 mm long, porrect with a decurved apex, deeply 3-lobed; lateral lobes incurved to spreading, asymmetrically oblong-ovate, 9-12 mm long, 5-7 mm wide; mid-lobe convex, the margins downcurved, broadly cuneate when flattened, 7-13 mm long, 8-11 mm wide, narrow at the base then flared, apex shallowly to broadly notched. *Labellum callus* consisting of a single yellow ridge 4-5 mm long, smooth. *Column* porrect from the end of the ovary, c. 4 mm long, c. 3.5 mm wide. *Column wings* oblanceolate, c. 4 mm long, c. 1.7 mm wide, cream with irregular brown margins. *Anther* narrowly ovate, c. 3.5 mm long, c. 2.5 mm wide, cream with purple-brown markings. *Pollinarium* c. 3.2 mm long, c. 2 mm wide. *Stigma* cordate to quadrate, c. 3.5 mm long, c. 2.5 mm wide. *Capsules* not seen.

Distribution and ecology: Coastal areas south of Mandurah to Busselton and perhaps as far south as Margaret River. Grows in *Banksia* woodland on well-drained sand and in Jarrah-Marri forest in well-drained sand over laterite. Flowers freely in the absence of fire. Flowering occurs late August to early October. Alt. 10-100 m.



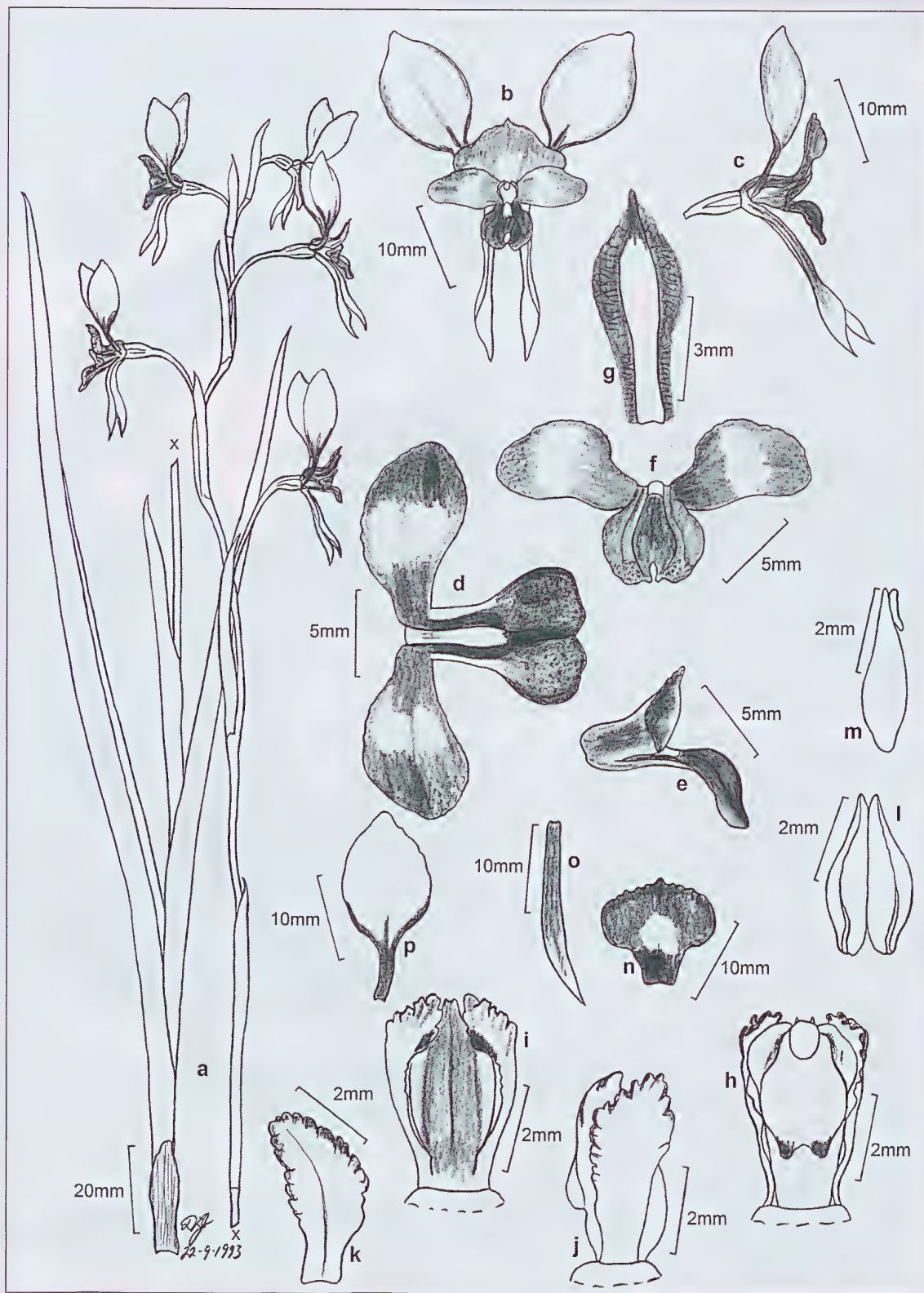
Diuris porphyrochila
Australind,
September 2009

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***Diuris porphyrochila*, Bunbury, WA, C.French.**

a. flowering plant; b. flower from front; c. flower from side; d. labellum from above, flattened; e. labellum from side; f. labellum from front; g. callus; h. column from front; i. column from rear; j. column from side; k. column wing; l. pollinarium from above; m. pollinarium from side; n. dorsal sepal; o. lateral sepal; p. petal.

Fig. 2. © D.L.Jones 22 September 1993



Diuris porphyrochila
Yalgorup National Park,
September 1993

Recognition: Characterised by tall habit with up to eight colourful flowers and a distinctive purple labellum.

Similar species: The range of *Diuris porphyrochila* overlaps that of *D. magnifica*, *D. tinctoria* and *D. cruenta* (described above). *Diuris magnifica* has fewer, much larger flowers while *D. tinctoria* has larger, less colourful flowers. *D. cruenta* also has smaller, less colourful flowers lacking any purple colouration and has a shorter scape.

Notes: A population from granite formations near Wellington Dam that matches this species in most features but with slightly smaller paler flowers and narrower petals, needs further study. In wetter than average seasons, *Diuris porphyrochila* flowers abundantly, often hybridising with *D. tinctoria*, producing a wide range of intermediate forms.

Conservation status: Restricted distribution but locally common and conserved in Yalgorup National Park and other reserves.

Etymology: From the Greek *porphyro*, purple and *-cheilos*, lip, in reference to the purple labellum of this species.

Selected specimens: Western Australia: corner Capel-Bunbury Road and Washington Road, 18 Sept. 1993, C.J.French (D.L.Jones 12026) (CANB); Yalgorup Natl Park, 18 Sept. 1993, C.J.French (D.L.Jones 12029) (CANB); Wellington Dam, near Collie, 7 Oct. 1995, C.J.French (D.L.Jones 14481) (CANB); Wellesley North Road, 9.4 km E of Old Coast Road, 2 Sept. 1998, C.J.French 1294 (CANB); Darkan Oval, 13 Sept. 2001, C.J.French 3197 (CANB).

Acknowledgements

Much appreciation to Anna Monro and Emma Toms for help with specimens at CANB; also the directors and curators at CANB and PERTH for giving us access to specimens. We also thank Jean Egan for preparing David Jones's drawings for publication, Mark Clements for access to photos of type specimens, Barbara Jones for checking the manuscript, Marion Garratt and Karina Richards for technical assistance. Special appreciation to Garry Brockman, Andrew Brown, Nye Evans, Barbara Jones, Marie French and the late Bill Jackson for companionship on field trips. All photos by Chris French.

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Diuris porphyrochila
Big Rock,
Wellington Dam,
September 1997



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Diuris porphyrochila
Brunswick Junction,
September 1995

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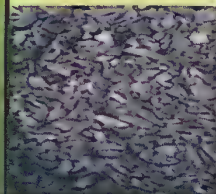
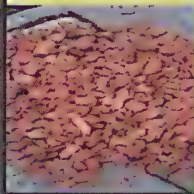
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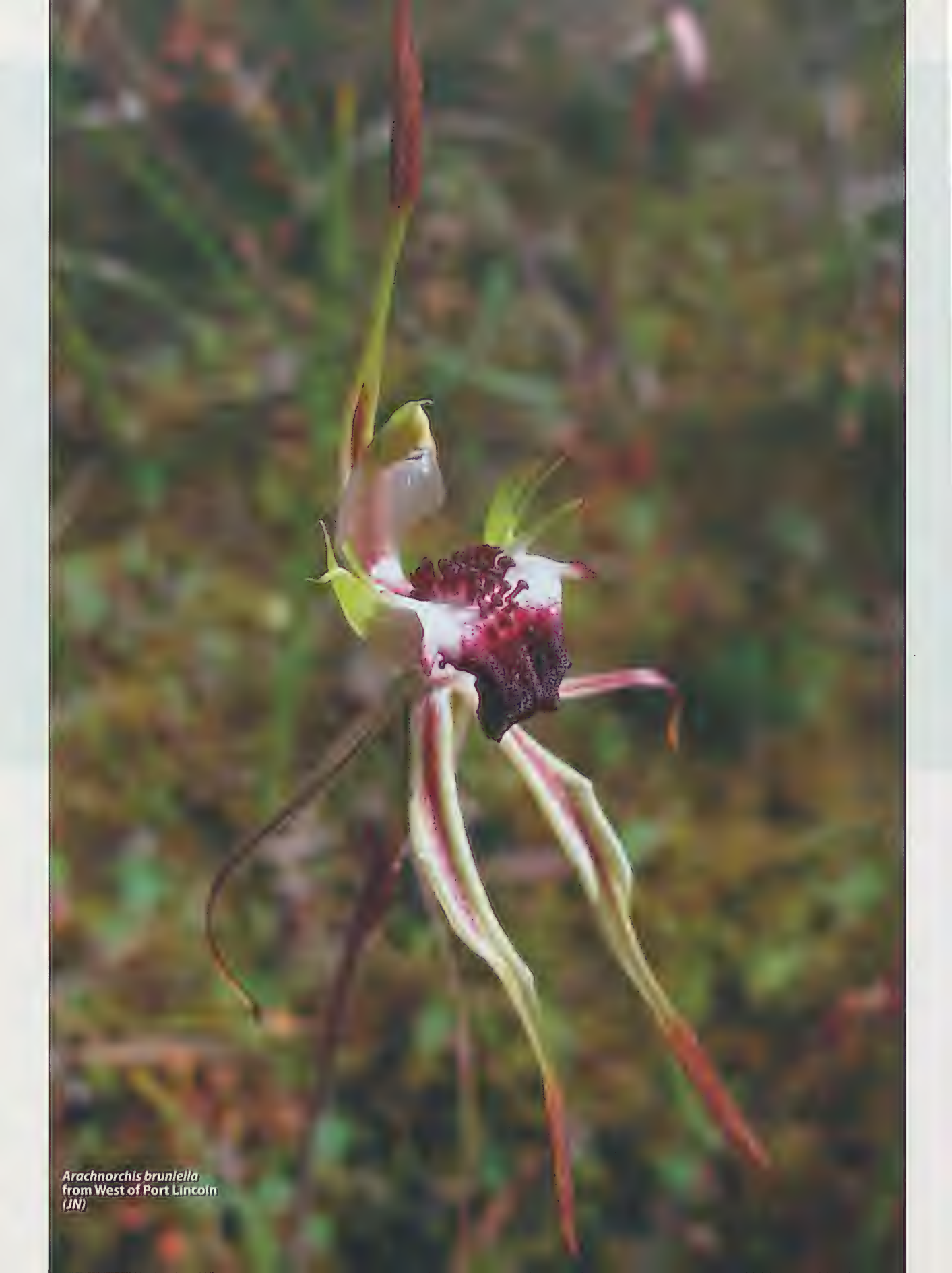
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Arachnorchis bruniella
from West of Port Lincoln
(JN)

Two new *Caladeniinae* (Orchidaceae) from South Australia

by Robert J. Bates

Abstract

Arachnorchis bruniella and *Stegostyla transitoria* subsp. *isolata* are described here as new. Notes are included on their distribution, ecology and conservation status. Their distinguishing features are compared with those of allied taxa.

Key Words

Orchidaceae, *Caladeniinae*, *Arachnorchis bruniella*, *Stegostyla transitoria* subsp. *isolata*, new species, South Australia, Eyre Peninsula and Kangaroo Island, Australian Flora.

Introduction

Arachnorchis and *Stegostyla* were erected by Jones & Clements (2001) as genera in the subtribe *Caladeniinae*, segregated from *Caladenia* R. Br. The status of each genus is supported by the morphological and molecular studies of Jones & Clements (2002). *Arachnorchis* is a complex genus of more than a hundred taxa endemic to temperate Australia. All taxa have a pair of waxy, yellow structures at the base of the column; such structures are not present in any other genus of the *Caladeniinae*, (Bates 2016). *Stegostyla* is a smaller and very different genus of about 30 taxa mostly restricted to South-eastern Australia with a few in New Zealand. According to Jones (2006) many *Stegostyla* remain unnamed. Hence the need to describe a new South Australian taxon here.

Stegostyla differs from *Arachnorchis* in its lack of either fibrous tunicate sheaths on the tubers or terminal osmophores on floral segments, nor do species of *Stegostyla* have the yellow waxy structures on the column as in *Arachnorchis*. Instead *Stegostyla* have more slender, wiry scapes, often with multiple flowers which in the outcrossing taxa are fragrant. The floral segments of *Stegostyla* are short; unlike the mostly long-sepalled *Arachnorchis*. The exterior of the perianth segments in *Stegostyla* are heavily adorned with stalk-less glands, the labellum calli of several sorts, their heads often ragged or papillose. It is unrealistic to regard these divergent morphologies as belonging in a single genus. Whereas other segregate genera including *Glossodia* and *Pheladenia* are known to form hybrids in the wild both with each other and with other segregate genera of the *Caladeniinae*, *Stegostyla* does not appear to do so. It is surprising then that whilst the former genera are universally accepted *Stegostyla* is not. For the sake of consistency all segregate genera of Jones & Clements (2001) are accepted here.

Materials and methods

Descriptions of the new taxa were made from fresh specimens. All types relevant to this study, (and specimens

cited) have been seen by the author while plants have been imaged *in situ* by the author and others associated with the project.

Taxonomy

1. *Arachnorchis bruniella* R.J. Bates sp. nov.

With affinity to *Arachnorchis macroclavia* (D.L. Jones) D.L. Jones & M.A. Clements but differing in its smaller size, longer, finer trichomes on leaf margins and scape; overall shorter floral segments, rigidly erect dorsal sepal; shorter, medially grooved, dark brown sepaline osmophores and much finer marginal fringe on the labellum, this fringe extending onto the margins of the mid-lobe as irregular red teeth. *A. bruniella* also has a longer acuminate anther point and broader column wings.

Type: South Australia, Eyre Peninsula, Port Lincoln, Snook Landing, on edge of coastal (Parnkalla) trail, 9 Sept 2013, R. Bates and party, RB 95060 (holo AD; iso AD).

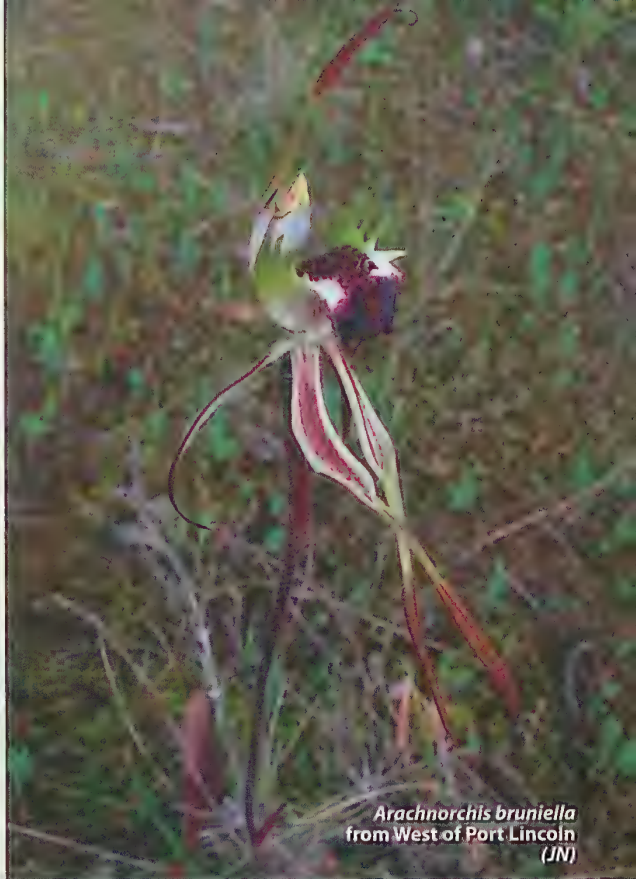
Illustration: Bates (2008-2015) as *Arachnorchis* species 'Small brown bayonets.'

Description: Dwarf, hirsute, tuberous terrestrial herb 10-20 cm tall, growing in clumps of 2-6 plants or as scattered individuals. *Tuber* not seen. *Leaf* linear-oblong 40-120 mm long, 4-8 mm wide, obliquely erect, green above red below, base of leaf with clasping hyaline sheath red; *apex* acuminate; *margins* red, lined with fine white, perpendicular, colourless, trichomatous hairs to 2 mm long; these comprising a mix of unicellular and multicellular forms. *Scape* mostly rigid, maroon, generally 12-18 mm long, c. 1 mm diam., trichomatous, with a blend of short gland-tipped and longer eglandular forms 1-1.5 mm long, glands minute, sub-spherical, maroon; glandular hairs becoming more numerous distally. *Sterile bract* lanceolate, red, 8-12 mm long, 1-2 mm wide, clasping at the base, thereafter arcuate-falcate; *apex* acuminate. *Floral bract* similar to sterile one clasping the ovary base. *Ovary* yellow-green, sub-cylindrical, 5-10 mm long, c. 2 mm wide, *surface* densely covered with short glandular trichomes c. 0.5 mm long. *Flower* single, cream, green, maroon and chocolate, to 30 mm across. *Floral segments* lanceolate, 20-30 mm long, cream to pale yellow with broad, maroon median stripe. *Sepals* with dark brown, bayonet shaped, blunt irregular teeth, *basal lobe* with proximal margins smooth, erect, curved, *mid-section* green with a marginal fringe of four or five, erect, bright green, narrow teeth to 2 mm long 0.5 mm wide; *central lamina*

cream with 4-6 irregular rows of maroon, golf club shaped calli to 1 mm long with a few longer, linear, erect basal calli to 1.5 mm long. *Column* green with red markings, 6-10 mm long, 1-2 mm wide, erect, with a basal pair of waxy, deep yellow, elliptical, smooth, rounded structures to 0.7 mm long; *column wings* distal, broad, transparent, quadrate, c. 2.5 mm long, 1.7 mm wide; *anther* green to pink, c. 0.8 mm long including the acuminate, anther point which is c. 0.5 mm long. *Pollinia* clavate c. 1.5 mm long. *Stigma* elliptical c. 1.2 mm across. *Capsule* obovoid, densely glandular hairy, to 7 mm long, yellow-green with red ribs.

Distribution and ecology: Endemic to South Australia from the West Coast near Venus Bay and Calpatanna Waterhole, south to Port Lincoln, then north to the Middleback Range and across Spencers Gulf to the hills behind Port Pirie, rarely more than twenty kilometres from the shore. Restricted to fertile soils in shrublands, low mallee and under native *Callitris* pines; rarely in the littoral zone as at the type location where it grows just 20 metres from the water line. Flowering has been recorded throughout September and well into October and the species is pollinated by a sexually attracted brown and white thynnid wasp as yet unidentified.

Recognition: Characterised by its small stature, long trichomes on leaf margins, relatively short segments with vivid red median stripe and mostly short, dark brown, gladiate osmophores with their median groove. The short rigidly erect dorsal sepal, short curved petals and relatively short fringe on labellum margins often extending to the apex all make this an easy to identify taxon.



Arachnorchis bruniella
from West of Port Lincoln
(JN)



Arachnorchis bruniella
- leaf cluster on
flowering plants
(RB)



Arachnorchis bruniella
- from TYPE Location:
Eyre Peninsula, Port Lincoln,
Snook Landing

Similar species: There are no less than eight other green-comb *Arachnorchis* spider orchids on Eyre Peninsula. *A. aurulenta* differs in its long, thick, golden osmophores; *A. conferta* subsp. *occidentalis* in its shorter stature, hardly fringed labellum, and tiny orange osmophores on petal tips as well as on sepals. *A. clavula* differs in its narrow, not flattened yellow green osmophores; *A. interanea* in being a very tall slender species with very long, sparse labellum fringe as well as its inland distribution, *A. septuosa* differs in its greater stature, broad, laid back labellum which is mostly red. *A. stricta* differs in its larger flowers, lack of osmophores and yellow based labellum calli; *A. viriosa* in being considerably larger in all its parts, especially in the elongated sepals; *A. toxochila* differs in its tiny size, bow shaped labellum, lack of osmophores and much reduced labellum fringe. In addition there are at least two other undescribed taxa, one characterised by short but fleshy, pale yellow, flattened osmophores, the other by its minute dark brown osmophores. These will be the subject of a future paper. Eyre Peninsula has more species of green-comb spider orchids than any other comparable area.

Conservation status: Not well studied but in respect of its fertile soil requirements (now mostly agricultural land) and despite its broad distribution likely to be rare. Suggest 3RCi according to the criteria of Briggs & Leigh 1996.

Etymology: from the Latin *brunea* brown with the diminutive suffix 'ella'; reflecting the small brown sepaline osmophores.



Arachnorchis bruniella
- labellum detail:
Parnkalla Trail,
Port Lincoln
(JN)



Arachnorchis bruniella
from Cowell granites
(RB)



Arachnorchis bruniella
with *Lestricothynnus*
pollinator at Carapsee
(RB)

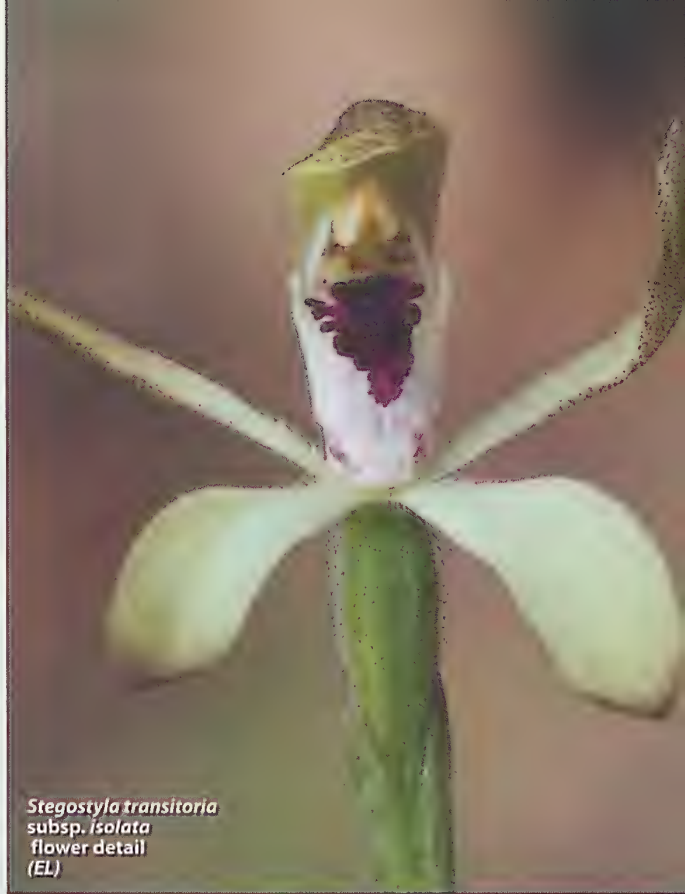
2. *Stegostyla transitoria* (D.L.Jones) D.L.Jones & M.A.Clem. **subsp. isolata** R.J.Bates **subsp. nov.**

Differs from ssp *transitoria* in its smaller size, always single flower (1-3 in subsp. *transitoria*); longer, almost glabrous leaf compared to the densely trichomatous leaf of subsp *transitoria*; more slender scape, and distinctly and obliquely hirsute tepal margins. The petals of subsp. *isolata* are narrower and the outer surface of the tepals is more densely and minutely glandular than subsp. *transitoria*. The flowers of subsp. *isolata* are smaller in all their parts, rarely opening and when they do it is just for a few hours compared to the 1-3 days for subsp. *transitoria*. The margins on the labellum mid-lobe of subsp. *transitoria* are irregularly lacerated and the calli shorter and more deformed. The lamina is also vaguely crenulated.

Type: South Australia, Kangaroo Island, Squashy Creek crossing N of Playford Highway, Allandale; 2 Oct 2013, R.J. Bates 94501 (holo AD).

Description: *Tuberous, hirsute, dwarf terrestrial herb* 10-17 cm tall, occurring as single plants or small loose clusters. *Leaf* narrow-linear, obliquely erect, 10-14 cm long, 0.6-0.8 mm wide, pale green; *base* purplish, enclosed in a hyaline sheath; *leaf lamina* with 5-7 longitudinal striations, mostly glabrous; *apex* acute. *Scape* 10-18 cm long, very slender (just 0.2 mm diam. distally); *trichomes* dense, patent, to 1 mm long, a mixture of transparent, eglandular and shorter glandular forms; *glands* minute, purple-black, sub-globular, often paired. *Sterile bract* narrowly ovate, 5-6 mm long, 1-1.4 mm wide, tightly clasping, pale green with translucent margins and some pink tints; *apex* apiculate. *Floral bract* similar, narrowly oblong, c. 5 mm long, 1 mm wide, pale green with white margins, shortly trichomatous; *apex* emarginate. *Ovary* green, partly enclosed in floral bract, sessile, narrowly obovoid, tapered from base, 4-5 mm long, 1.5-2 mm wide, densely glandular-trichomatous. *Flower* single, 10-12 mm across, rarely opening and then only briefly, internally cream (drying yellowish); *externally* green, surface densely covered with thousands of microscopic dark purple brown, ovoid to hemispherical, sessile glands c. 0.01 mm across. *Labellum lamina* white, with 4-6 longitudinal striae and purplish, interrupted transverse bars or blotches; *apex* deep magenta. *Tepals* densely and minutely glandular outside, faintly striate inside with obliquely hirsute margins, the hairs to 0.5 mm long; *dorsal sepal* hooding the column; *lateral sepals* falcate, divergent; *petals* upswept alongside column. *Dorsal sepal* narrowly spatulate, c. 8 mm long, 1-2 mm wide, cucullate; *apex* obtuse. *Lateral sepals*, stalked, lamina ovate-lanceolate, 7-8 mm long, c. 2.5 mm wide, falcate, obtuse. *Petals* narrowly oblong to linear-spatulate, 7-8 mm long, 1-1.8 mm wide, asymmetrical, shortly acuminate. *Labellum* erect, on an indistinct, immobile claw; *lamina* distinctly three lobed; quadrate in outline when flattened, c. 5 mm long, 4-5 mm wide, erect proximally; *apex* decurved; *lateral lobes* erect and embracing the column, c. 1 mm long, margins mostly entire; *mid-lobe* c. 1.5 mm long; margins highly irregular with a mix of maroon, lacerate teeth and three proximal pairs of narrower, darker, irregularly papillose calli to give an overall very untidy appearance. *Lamina* with irregular very variable calli extending to midpoint of mid-lobe; *proximal ones* tall and slender to 0.6 mm long, 0.01 mm wide, *stalks* white with a tiny orange head; *distal calli* quite different, wholly maroon, sessile, papillose, decreasing in size toward the apex. *The longest* c. 0.5 mm long, *head* 0.3 mm across, sub-globose. *Column* 4.5-5.2 mm long, c. 1.5 mm wide, erect, incurved distally, narrowly or hardly winged; *central ridge* rounded, indistinct, to 0.4 mm wide; *anther* c. 1.2 mm long 0.7 mm wide, papillate; *rostrum* indistinct. *Pollinia* four, cream, flat, mealy. *Stigma* elliptic, c. 1 mm wide, sunken, green. *Capsule* not seen.

Distribution and ecology: restricted to South Australia, toward the north western end of Kangaroo Island on slopes adjacent the highest parts and only seen on the upper creek-banks of slow flowing, spring fed creeks in open woodland of black-wood and *Eucalyptus* spp. with sparse grass-trees and *Banksia*,



Stegostyla transitoria
subsp. *isolata*
flower detail
(EL)

in yellow-orange friable clays mixed with lateritic rubble. Most of this habitat has been cleared for farming and plantations of *Pinus radiata* and *Eucalyptus globula* which encroach upon the small, remaining pockets of suitable habitat. Other orchids present include *Calochilus* species, *Petalochilus* species including *P. cleistantha* and *P. prolata* with other self-pollinated, probably undescribed taxa.

Flowering period: flowers may open for a few hours on warm sunny days from late September into early October.

Recognition: Characterised by the almost filiform, scape, single, tiny, rarely and briefly opening, pale flower to 12 mm across, the comparatively long, slim, flaccid mostly smooth leaf and the ragged appearance of the labellum mid-lobe with its purplish colouring.



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Notes: *Stegostyla* is supported by the morphological and molecular studies of Jones & Clements (2002). There are at least twenty species from South-east Australia and New Zealand. There are five species in South Australia but this new taxon is the first record of the genus for Kangaroo Island. Recent surveys indicate other as yet un-named, self-pollinated taxa may be present in the South-east and Kangaroo Island regions.

Stegostyla transitoria was named (as *Caladenia transitoria* D.L. Jones) in 1998 from plants collected near Launceston, northern Tasmania in November 1990. The species had previously been treated as a form of *Caladenia iridescens* R.S Rogers, which differs in having much larger, more colourful flowers and is mostly restricted to western Victoria.

S. transitoria was first located by the author on Kangaroo Island in the 1980's but never identified as such because no expanded flowers were seen. *Stegostyla iridescens* has recently been added to the census of South Australian plants on eflora South Australia (as *Caladenia iridescens*) based on collections (since 2004) from the Lower South-east of the state.

Conservation status: recorded from three sites on private property, possibly reduced to two now and afforded no protection. Threatened by logging activities, weeds and declining rainfall suggesting the status of 2E according to the criteria of Briggs & Leigh (1996).

Etymology: the epithet *isolata* (Latinised version of the English *isolated*) refers to the fact that the Kangaroo Island population is at least 500 kilometres from the nearest known populations (Eastern Victoria and Tasmania; the latter across the Southern Ocean from the eastern end of Kangaroo Island).

Stegostyla transitoria
subsp. *isolata*
whole plant in situ
(EL)



Stegostyla transitoria
subsp. *isolata*
base of plant
showing trichomes
& colourful sheath
(EL)

Acknowledgements

I thank the many active members of NOSSA (Native Orchid Society of South Australia) for their assistance in this project including Barb and Ken Bayley, Pam Hewstone, June Niejalke and Errol Sheppard who located new populations and provided images of *Arachnorchis bruniella* and to Ed Lowrey for imaging the new *Stegostyla*; Thelma Bridle and Peter McCauley for organising orchid expeditions to Kangaroo Island and thanks to David Jones for discussions and advice. I also appreciate assistance from staff at the South Australian State Herbarium (AD) especially librarian Lorae West and manager Juergen Kellermann for processing the types. Photographs used in this paper were taken by June Niejalke, Ed Lowrey and the author.

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Tropical Queensland Orchid Council Inc.

The Townsville Orchid Society Inc will celebrate their 70th Anniversary by hosting the 52nd Annual TQOC Conference and Show in June 2017.

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Planning is under way, it is planned to make this a very affordable conference with substantial prize money for Grand & Reserve Champion plus the various sections in the show.

Weather in Townsville in June is very pleasant, bordering on cool of an evening so a cardigan/pullover would be recommended. Dress is tropical (casual) with NO ties/suits please.

For further information please contact Ted Boon by landline telephone on (07) 47752529 or by email at tboon_wildcat@internode.on.net

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Environmental or “Hazard Reduction” Burns

Text and photos by Alan Stephenson

Over many years I have witnessed the aftermath of so-called hazard reduction burns and in the main the results are not pretty, mainly due to the frequency with which they are undertaken.

These burns are undertaken in bushland areas and are designed to lessen the risk of summer fires to residential areas; however the frequency with which they are undertaken should be the subject of serious concern. One of my objections is that a large number of the burns are undertaken some distance from a residential development.

Usually these burns are initiated in cooler autumn to early winter weather. As far as orchids are concerned this timing will destroy any already flowering terrestrial species and also any which are in the process. However, a lack of positive scientific proof fails to provide the necessary information as to which species are more attuned to a low intensity burn at this time.

We all know the normal evolutionary process over millions of years is for our land to be subject to naturally occurring hot summer fires, usually initiated by lightning. Two years ago an area of bushland west of Nowra was burned and I did notice what appeared to be an increase in the number of *Cryptostylis* leaves but this was just one instance of unplanned observation and therefore is unreliable. All leaves were of course juvenile and will probably take another year at least after emerging to support flowers, which means two years between flowering but what would happen to the orchid population if a natural bushfire occurred in that same habitat?

Indigenous persons recognised the effects of natural fires and used this in their lifestyle as they realised their food source of orchid tubers and the roots of small shrubs (Yams), increased in the year following these events. This is part of the reason for their nomadic lifestyle in some parts of Australia.

Recently two known areas containing endangered species orchids were burned. One of these was the *Caladenia tessellata* (syn. *Arachnorchis tessellata*) site in a section of the Morton National Park. Over the past two years I had pressed the local National Parks and Wildlife Service people to burn this site and I was notified by Wollongong OEH office the burn was to take place on a particular date in late April, however when I contacted the NPWS person responsible my phone message went unanswered. I was hoping to photograph the burn but was prevented by a lack of co-operation, not from the local NPWS but another branch to the south and I trust this branch does not require my co-operation at any time in the future.

More recently the same OEH officer called to say a similar burn was to be carried out on two of four Control Plots of *Prasophyllum affine* at Kinghorne Point and my attendance would be welcome. The burn was undertaken by the Rural Fire Service. The area to be burned was about 150m x 150m and comprised of low but very dense heath. I, along with an OEH officer from Queanbeyan have monitored the four plots of marked plants since the inception of monitoring in 2001, this being a two-day operation. That year was the only time any planned slashing or burning had been undertaken on any *Prasophyllum affine* site and this followed the establishment of the Recovery Team, which was initiated to plan and oversee known sites at Kinghorne Point and Vincentia, NSW. I should add, neither slashing or burning any of the sites produced more plants but also did not lead to a reduction in plant numbers and only resulted in plants being more visible but as this trial was 15 years old, another was thought necessary.

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Caladenia tessellata

However, the prime expectation was to increase plant visibility as monitoring was at times extremely visible when the numbered metal stakes were hidden among dense heath. The site for *Caladenia tessellata* is not monitored but I have noted 84 plants in the best season of 2008.

The Wollongong OEH officer arrived at the site along with me to take site photos before during and after the burn which began just after 10am and lasted for one hour. All went smoothly with hoses from a water tanker being used to control the extent of the fire as the area has been surrounded by a fence for many years to prevent orchid predation by the Kangaroo population.

When the RFS people first arrived and introductions were underway, I was surprised when I mentioned my name was Alan and one of them replied, oh, you're Alan Stephenson. I was surprised as I did not know this person but we managed to get along during the time we were at the site.



Caladenia tessellata site 2015
(before burn)



Caladenia tessellata site 2015
(after burn)

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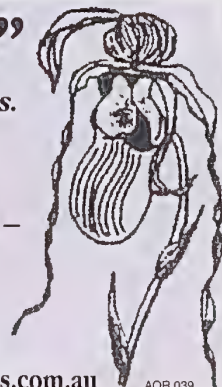
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Photos from the air would have been better to show the area but the best I could do was to stand on a fence post to record the event but it was well executed and next orchid season will be the final proof of easier plant visibility.

The differences between the two sites are that *Prasophyllum affine* is at sea level and generally low heath, while *Caladenia tessellata* is at 720m and a mix of heath over sandstone, with some *Isopogon*, *Grevillea*, *Kunzea* and a sprinkling of *Eucalyptus*. The *Prasophyllum affine* site is also home to several species of *Diuris* (Donkey Orchid) while the *Caladenia tessellata* site consists of 32 different terrestrial orchid species, one of which, *Caladenia transitoria* (syn. *Stegostyla transitoria*) is quite rare. It is also home to the only two plants of *Diuris chryseopsis* I have seen in the Shoalhaven region.



Prasophyllum affine site,
Kingham Point 2016
burn in progress



Prasophyllum affine site,
Kingham Point 2016
after burn

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Prasophyllum affine
(pale form)



Prasophyllum affine
(dark form)

As far as my knowledge of these burns goes it looked like the job was done as planned and it was obvious the site was cleared so I will go back to check vegetation growth and for signs of orchid growth as leaves for both species appear during mid 2016.

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Revisiting *Genoplesium baueri*

by Alan Stephenson

Genoplesium baueri is a terrestrial species with which I have become deeply involved over the past 15 years. It is currently listed as an Endangered Species under NSW Threatened Species Act 1995 (TSC) and the Commonwealth Environment Protection Biodiversity Act 1999 (EPBC). I say currently as at the time of writing the commitment to environmental legislation in NSW seems to be waning. This is a great pity and possibly a serious problem as it was originally listed as vulnerable under the TSC Act but the possibility of development threats to several sites required an upgrade and submissions were written to have it listed as endangered under both the TSC Act and EPBC Act. These were finalised in November 2012.

Genoplesium baueri, R. Br. (1810) is a monotypic species named after Ferdinand L. Bauer which has undergone one generic change, firstly from *Prasophyllum* where it has been known as *Prasophyllum deaneanum*, *Prasophyllum baueri* and now, *Genoplesium baueri*. At one stage the *Prasophyllum* tag was applied to all midge orchids and they were commonly referred to as "Pygmy *Prasophyllums*". This species also carries the burden of several common names, which is a source of confusion with some people and a source of frustration and annoyance for me. Bauer's Midge Orchid, Brittle Midge Orchid, Pink Stemmed Midge Orchid and Yellow Gnat Orchid are all names of which I have heard or read.

After reading the above paragraph I tend to think about those people who choose to look to the past as far as orchid nomenclature is concerned and wonder how far they wish to regress. I am a non-scientific person but realise science never stops and I choose to use what I consider to be modern nomenclature as stated by Australian scientists who have chosen to undertake the necessary research to enable ordinary orchid enthusiasts to better understand their hobby. In defence of Australian scientists, it is also a fact there are numerous similar changes to exotic species and these also must be given the same consideration.

Several years ago, a road was planned through a Regional Park in Nowra which would place all 27 plants of *Genoplesium baueri* in danger as well as many plants of the endemic shrub, *Zieria baeuerlenii*, either directly from the road construction or from residential development which would follow. The submissions were written to have *Genoplesium baueri* listed under the TSC & EPBC Acts and as 66% of all plants occur in the Shoalhaven, a copy was sent to the Shoalhaven City Council (SCC) for comment. Following the listing a friend and I were checking one site containing three individuals as a matter of course and we noted the three had disappeared. I was stepping out the eight metres down and six metres in from a main track and my friend was having a chuckle as he could see where I was headed. He also made the comment, "that is about the size of your gravesite." What looked like a

scrape with a shovel about 1.5m x 2.5m was quite obvious so the NPWS were contacted. The next day the local manager saw the scrape and said "this does not look like an accidental scrape, particularly as it is the only mark of this type in 25ha of bush land". The assumption was made the plants had been removed by a person/s with precise knowledge of their location to enable road construction and as would be expected no perpetrator was found. However, since that time the road has been abandoned and the population is more secure.

I endeavour to keep an eye on several of the populations as we have a "develop at all costs" local council and I consider nothing can be guaranteed from year to year.

During my presentation to the NSW Planning Assessment Commission (PAC) regarding the road I made a point of saying I would only use the correct botanical name and this prompted a comment from an audience member who was in favour of the road. He asked why I should use a scientific reference. In response I mentioned this was the only name this species would be referred to anywhere in the world and I then asked him how many different names he would accept on letters written to him. No response was received.

My obsession with this species goes back many years when driving slowly along a local national parks track I saw a plant from the window of my small 4WD. To me it stood out like a beacon in a run-off drain as it was beautifully famed under the arch of a small shrub in the manner of the Sydney Harbour Bridge. Sometime later when showing the plant to a botanist I feel he thought my sighting may have been fanciful but this plant has nine other companions along five kilometres of track.

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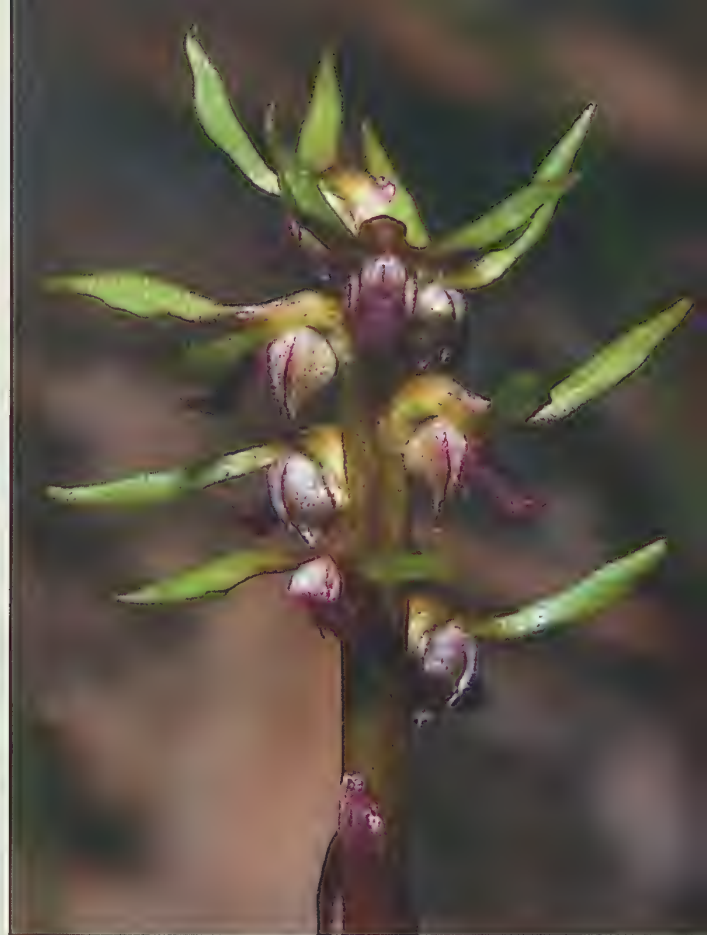

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I consider a plant with 4-6 flowers to be a standard but have encountered plants with 9, 11 and 12 flowers. In addition to these I have also located several "Xanthic" (yellowish) forms, the most recent plant was 96mm tall with three flowers. The first three plants were in 2007 and the most recent was on 28 January 2016, along with several standard plants, although these were 70 metres from the oddity. Even among the so-called Xanthic forms there are variations but as for most terrestrial species, variations in colour should be accepted and clones of one another would be boring and cause me to lose interest rather quickly. As a result I have a photo or two (hundred) of what I feel is a most attractive species.

In recent times I have also become involved with the NSW Office of Environment & Heritage (OEH) "Save Our Species" program and this is just one of several species on their list. In early February 2016 I showed two OEH officers the previously mentioned plants in the regional park and this was the first time either had seen a plant *in situ*. Once seen they learned very quickly to look for a certain habitat within the bushland.



This is a clear or semi-clear section, free of deep leaf litter, perhaps with bare ground but this can be as small as one square metre. Plants do grow along the edges of tracks but this regional park does not have any cleared tracks so the clear to semi-clear sections are critical. A few days after the OEH visit I also took the SCC Threatened Species Officer to the same site to show him the same species, also for the first time.

I have also learned that so-called professional environmental assessment (EA) persons have little or no orchid knowledge and one incident concerning *Genoplesium baueri* is notable. Near Callala Bay on the shores of Jervis Bay, a residential development was planned and the team leader of the company undertaking the EA contacted me regarding an orchid identification. This was at the insistence of one of his team, a person well known to me. I said yes with the agreement it be done on-site so I could see the plants and site. The survey team had located 72 plants in an atypical habitat of moderately dense over storey and ground cover. The identification was done and although I did not tell them at the time I thought they did an excellent job to find the plants

in that particular habitat. These plants also seem to be secure as a 50 metre exclusion zone was placed around each separate population and to date no development has occurred almost 10 years later.

This species, as many others, despite their environmental significance are frequently viewed as of little or no importance merely because they are small, cannot be grown and will not earn any authority any money but to me this is the true measure of their value and not all flora or fauna should be viewed solely in dollar terms.

On a similar note I was at the site of the two plants in the Ulladulla region in late February and can say these plants have been consumed by increasing vegetation density and while these have been lost, at least for a while, their non-appearance is more of a natural event than the previous loss.

Alan Stephenson
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Genoplesium baueri
with dehiscing seed
capsules about eight
weeks after flowering



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Pests and Diseases

by David Banks

With proper hygiene, healthy orchids are generally free of pests and diseases. Not all insects in the orchid house are "bad". Many, such as praying mantids, ladybeetles and spiders are quite useful in controlling pests. So don't kill every creature that you see! There are many pests to test the patience of the orchid enthusiast.

Caterpillars can make a meal of buds, flowers and tender new growths if left unchecked. Grasshoppers and crickets can do a lot of damage in a short space of time. *Dendrobium* beetles strip flowers and destroy new growths. Neglected plants can often provide homes for sucking insects such as mealy bugs and various species of scale. In fact, scale and mealy bugs appear to be the most universal pest in regards to orchid cultivation. If plants are often kept very dry, red spider mite could become a problem, especially with cymbidiums. Frequent hosing under the foliage will help. Aphids can be a nuisance and stunt developing growths and inflorescences. Commercial snail pellets can be laid in damp weather to combat slugs and snails but make sure they are not accessible to young children or the family pet. These can be sprinkled on the floor of the orchid house and/or scattered over the plants. "Torch visits" of an evening can reap rewards by catching many nocturnal creatures, such as crickets, grasshoppers plus slugs and snails, which can do a lot of damage if left unchecked. Baits may need to be set if mice and rats are a problem. Again, make sure these baits are not accessible to the family pet.

Most people today do not like using insecticides (for health reasons and the fact they often kill "good" insects), and only employ them as a last resort. Instead of spraying the whole collection, I prefer to "spot-spray" for the specific ailment, using a 500ml atomiser. A couple of such atomisers (using a long lasting Pyrethrum mix) are handy to keep in the orchid house for localised application. Check with your local garden centre or orchid nursery for advice on what products are registered, recommended and available for the specific pests in your area. If you have to use pesticides make sure you comply with the manufacturers instructions, wear protective clothing (and mask) and have a shower immediately afterwards. Beware of "spray drift" and only apply in still conditions – preferably first thing in the morning or at sundown.

There are increasing numbers of orchid growers who are growing some of the Southeast Asian "Tropical Pitcher Plants" (*Nepenthes* sp.) as a natural way of combating many flying and crawling pests. These carnivorous plants grow into vines and enjoy the same conditions as many orchids. They need high humidity for pitcher production. Some of the warm growing "lowland" species include *Nepenthes ampullaria*, *N. mirabilis*, *N. rafflesiana* and *N. truncata*. The cooler growing "highland" species and their hybrids will take brief periods down to the frost level, as long as there is a significant increase in the daytime temperature. Recommended species include *N. alata*, *N. maxima*, *N. sanguinea*, and *N. ventricosa*.

Fungicides may be used in times of prolonged damp and still conditions, to prevent or reduce outbreaks of rot. The best defence against such problems is to have your plants well spaced, meticulously remove dead leaves and husks off older back-bulbs and ensure the plants receive plenty of

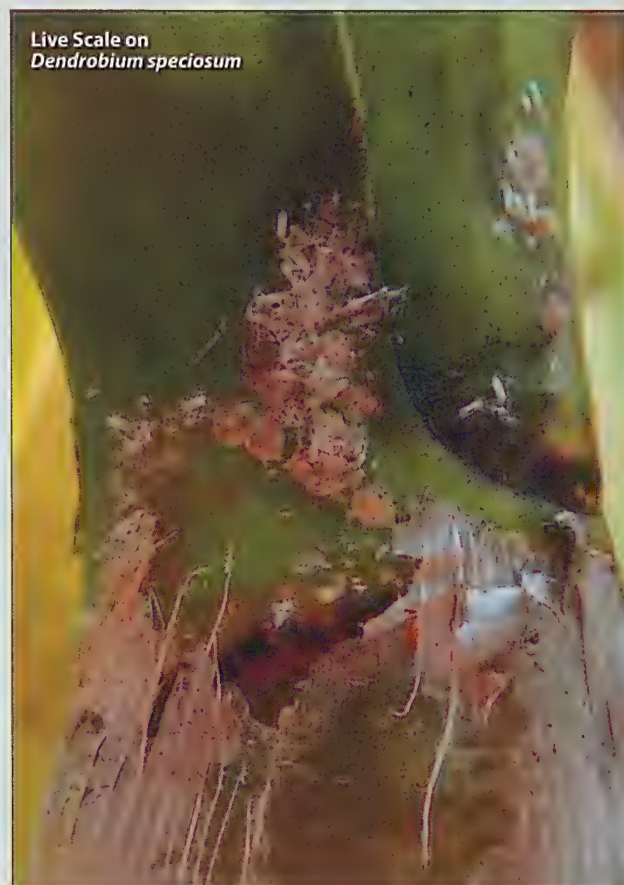
air circulation. Warm, humid and still conditions are the ideal breeding grounds for fungal problems.

Virus is arguably the biggest enemy to orchid growers and can affect most popular genera. It weakens the plant and often produces malformed flowers, sometimes with colour breaks. Unfortunately, there is no cure for infected plants, which should be destroyed. Keeping the plants "isolated" within a mixed collection is not an option, and may facilitate the rapid spread of virus throughout the neighbouring plants. There are many strains that are spread by mites, scales, aphids plus other sucking and chewing insects. However the worst culprits are the orchid growers themselves. Using unsterilised cutting implements are the fastest way of spreading many types of virus (such as *Cymbidium* mosaic, *Odontoglossum* ring-spot and Orchid Fleck virus, a type of rhabdovirus) throughout the orchid collection. Remember, even harvesting your flowers or spent spikes by hand or cutters could spread virus. Sterilise your cutting implements by flaming to a glow or (after rinsing in water) drenching in bleach or a saturated solution of trisodium phosphate (sugar soap) for five minutes.

David Banks

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by Alan W. Stephenson

Alan Stephenson lives in Nowra and is well placed to give the first botanical treatment of the native orchids of the Shoalhaven region. He has extended the distribution ranges of a number of uncommon and rare species, as well as discovering new taxa. This 68 page book is packed with both information and superb photography, almost exclusively taken by the author. All of the recorded orchid species native to the region are included and illustrated.

The introductory chapters discuss the area covered by this book, the structure of the orchid plants, their natural habitats, parts of an orchid flower, orchid structure and the pollination of orchids. This is followed by the main section of the book that alphabetically lists and

discusses each species, with information such as Common Names, Recent Synonyms, Flowering Time in the wild, plus a brief description of the plant, flowers and preferred habitat. There are many terrestrial species fully covered as well as a number of epiphytic and lithophytic genera that are found in the area.

The quality of the printing and colour reproductions are sparking. This is a wonderful field guide that will aid even the most novice naturalist or native orchid enthusiast and confidently assist them in identifying examples they encounter in the field. It represents excellent value, as it also covers many species found naturally along the East Coast of New South Wales.

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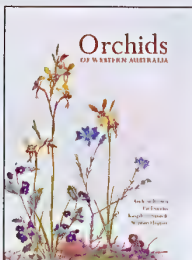
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THE ALLURE OF ORCHIDS

by Mark A. Clements

From 1788 when First Fleet artist George Raper painted *Diuris punctata*, the botanical world has been fascinated by Australian orchids. Hundreds of orchid images from the National Library of Australia's collection, with words by Mark Clements from the Australian National Herbarium in Canberra, make *The Allure of Orchids* a must-read for lovers of flowers, original paintings and our indigenous orchids. Many of these unique botanical illustrations are being showcased to a wider audience for the very first time.

The Allure of Orchids features an essay by internationally recognised orchid expert Mark Clements, accompanied by a portfolio of illustrations, both historical and modern, of this alluring species. In it you will find works by around 25 artists, including the extraordinarily detailed lithographs of early botanical illustrator Ferdinand Bower, Ellis Rowan's beautiful paintings, the delicate watercolours of Margaret Cochrane Scott, and many more.

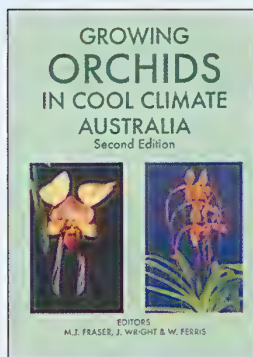
The Allure of Orchids is divided into two parts; Terrestrial or ground orchids and Epiphytic or tree dwelling species. Clements says, "These illustrations can be enjoyed simply as works of art and part of our rich and colourful Australian illustrative heritage. But, significantly, they are also part of the scientific record of this country, particularly during the early exploration of the continent."

Interestingly, a lot of the old and traditional Latin botanical names have been used in this work. The author makes a significant number of anecdotal notes and comments throughout the book, to keep the reader fully informed. It is a "must have" book for those interested in Australian orchids and historical botanical art.

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GROWING ORCHIDS IN COOL CLIMATE AUSTRALIA

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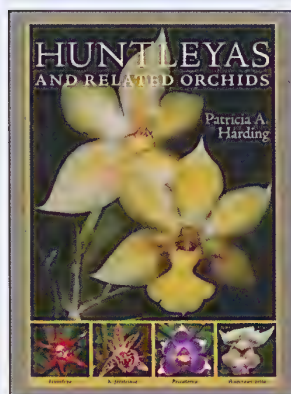
Editors: Fraser, M.J., Wright, J., & Ferris, W. 2013

This is an update of our earlier book and includes much new material. Written by members of the Orchid Society of Canberra, this book covers topics such as What are Orchids, Structures for growing orchids, potting media, pests and diseases, Orchid nomenclature, Orchid Classification and of course how to grow many types of orchids in cool climate regions of Australia. The main section covers individual cultivation of the most popular types of

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HUNTLEYS AND RELATED ORCHIDS

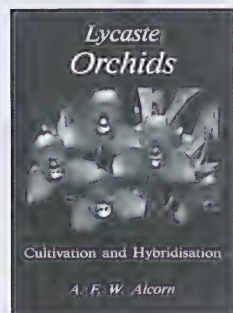
by Patricia A. Harding

Revered by avid orchid collectors for its delightful, star-shaped flowers, *Huntleya* is a small group of orchids found low in the forest. *Huntleya* is a small orchid genus that includes fourteen species. They occur in wet cloud forests at medium altitudes of Guatemala, Costa Rica, South America down to Bolivia. The type species *Huntleya melegris* also occurs in Trinidad. Besides their striking colours — from deep blue to waxy red, royal purple to almost black — flowers of this group are known for their distinctive shapes, patterns, and textures. As appealing as these lovely tropical orchids are, their identification has been

confused since the first species was described in the mid-1800s. Recent DNA studies have led to a clearer understanding of relationships and, as a result of this clarity, it is now possible to sort out the taxonomic problems and identify the characteristics that set species apart. In this first book devoted to the *Huntleya* alliance, author Patricia Harding presents evidence from the scientific literature, other growers, and her own experience that will enable orchid enthusiasts everywhere to identify their plants and grow them successfully. Patricia A. Harding is an accredited American Orchid Society judge who has been growing and photographing orchids for three decades.

260 pages, 150 colour photos. Hardcover.

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LYCASTE ORCHIDS - Cultivation and Hybridisation

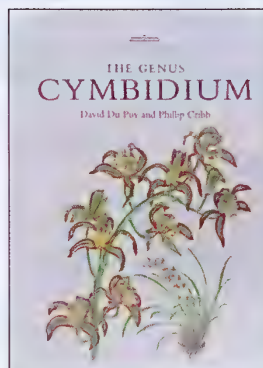
by A.F.W. Alcorn

Lycaste orchids are easy to grow, and they produce flowers that range from the beautiful to the bizarre. No book previously has provided detailed cultural requirements of the Lycaste, and this book should fill that gap, and encourage new growers to take up the cultivation of this beautiful genus. A section on hybridising contains valuable information on inheritance and genetics that will benefit any hybridiser, not just the grower of Lycastes, as well as helpful hints on how to avoid pitfalls in your hybridising program. Michael Hallett, a friend of

Fred Alcorn for a number of years, co-wrote this book with Fred and has completed it posthumously. He has a background in genetics, research and botany, and a passion for plants, especially orchids.

237 pages. Colour and B&W.

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THE GENUS CYMBIDIUM

by David Du Puy and Phillip Cribb

Second edition (2007). Full taxonomic accounts of all 52 species of *Cymbidium*, including distribution, maps, colour photographs, line drawings and colour paintings. Taxonomic key. Detailed conservation assessment of *Cymbidium*. Cultivation chapter and breeding chapters as well as chapters covering history, morphology, seed morphology, anatomy, cytology, pollination, uses and phylogeny.

369 pages, colour photographs, line drawings, maps. Small quarto, dustwrapper.

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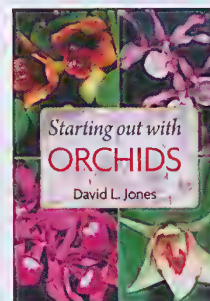
ANGRAECOID ORCHIDS: Species from the African Region

by Joyce Stewart, Johan Hermans, and Bob Campbell

These so-called 'Jewels of Africa' with their sparkling flowers, distinctive growth habit and floriferous nature are much prized and this account, the first to include the Angraecoid orchids of both Africa and Madagascar, is long awaited. It brings together, in a single volume, descriptions of all 690 species in this intriguing group of orchids and will be the essential reference for all Angraecoid orchid enthusiasts for years to come. Including such horticulturally important genera as *Angraecum*, *Aeranthus*, *Aerangis* and *Jumellea*. Stewart, Herman and Campbell have all spent time in various parts of eastern and southern Africa and precise ecological information relating to habitat, altitude preferences and flowering season of individual plants will be particularly helpful to growers. The diagnostic features of each genus are illustrated and over half the species are accompanied by exquisite photographs taken in both wild habitats and in cultivation.

432 pages, 290 colour photos. 185mm x 265mm. Hardcover.

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STARTING OUT WITH ORCHIDS

by David L. Jones

David Jones is arguably one of Australia's most prolific, precise and respected botanical and horticultural authors. The book is divided in two parts. Part One begins with the cultivation chapters, covering Easy Orchids for Beginners, General Cultivation Requirements, Growing Epiphytic Orchids, Growing Terrestrial Orchids, Orchid Pests and Diseases, Housing Your Orchids and Propagating Your Orchids. The information contained within these pages alone is required reading for all beginners trained to experienced orchid growers. The text is very easy to read and understand with numerous sound cultivation tips and treatments discussed. There are many excellent and clear line illustrations that help describe terms or highlight diagnostic features. There are over 250 colour photographs.

Part Two discusses the orchids themselves with concise information on each species. They are grouped primarily according to climatic requirements, starting with cool growing orchids progressing to the warm growers, in alphabetical sequence first with terrestrial genera, followed by the epiphytes. Both Australian and exotic species are treated together. For each entry there is specific detailed information on each species, as well as a simple table giving the basic cultivation needs and flowering season. A glossary is also included to explain unfamiliar terms.

240 pages, colour. 210mm x 148mm. Softcover.

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Western Australia Orchid Spectacular Conference & Show

5th & 6th August 2017, Scarborough, Western Australia

YES! The Western Australia Orchid Spectacular Conference & Show is back again in 2017.

We are compiling an email database for the forthcoming W.A. Orchid Spectacular Conference & Show in Perth, Western Australia. If you are really interested we would very much like to hear from you by completing the 'Expressions of Interest' page on the Conference web site.

http://www.waorchids.iinet.net.au/WAOS_2017.htm

The venue will be the Ballroom of the Rendezvous Hotel at Scarborough WA, which overlooks the famous Scarborough beach with its long stretch of white sand that attracts swimmers, surfers & body-boarders. Scarborough Beach is about a 20 minute drive northwest of Perth and is serviced by regular buses from the city. The venue is surrounded by many restaurants and cafes offering a wide variety of cuisines. Scarborough Beach is also popular for kite surfing and wind surfing. The Rendezvous Hotel boasts wonderful uninterrupted views all the way to Rottnest Island and to Fremantle down the coast.

The 2017 Conference show schedule will be produced and overseen by the Orchid Judging Panel of WA, and judging will be under AOC rules. It is planned to have the show set up and judging completed on Friday the 4th August, and open to the public on both Saturday 5th and Sunday 6th August with the lecture program and public workshops on both days. An invitation to the Opening Ceremony on Friday evening will be included in the (very reasonable) Conference Registration costs.

The WAOS Conference web site is now online and will be updated from time to time as we have further news and information for you. We intend to have all the usual pages including contacts, subscribing to our e-Newsletter, Conference venue, Lecture Program, our vendors (including pre-ordering to ensure that you are able to get the orchids that you want), and a host of other interesting facts that will

be posted as they come to hand. So please follow the links to the 'Expressions of Interest' page and register your interest now.

The 'What's New' page will give you the very latest information about our plans to make this a truly memorable event and updates on what's happening here in Perth. Future pages will provide information regarding accommodation, our ever popular orchid and wildflower tours, registration, the schedule, what to see in Perth and Western Australia and a gallery of Western Australia's unique native orchids (some of which you will be able to see by participating in the tour program).

Should you have any queries or questions, please feel free to contact the Chairman, Bruce Larson

(bruce@pegasusconsulting.org) or Tony Watkinson (waos@iinet.net.au).



Caladenia flava

Tony Watkinson

Webmaster, WAOS Conference

Email: waos@iinet.net.au

2016 ORCHID EVENTS – *What's on!*

August 19-21 St. Ives Orchid Fair
– NSW

August 26-28 Melbourne Orchid Spectacular
– VIC

September 2-4 ANOS Conference
– Kempsey, NSW

September 15-17 North Shore Orchid Society
Spring Show
– St Ives Shopping Village, NSW

September 22-24 Parramatta & District OS
Winter Orchid and Clivia Show
– Winston Hills Mall, NSW

September 24-25 ANOS (Victorian Group)
Spring Show

– Mt. Waverley Community Centre, VIC

September 25 Hills District Orchids
– Spring Open Day
– Northmead, NSW

October 15 Revesby Workers'
Australian Native Orchid Club
– Revesby Workers Club, NSW

October 16 Barrita Orchids
Sarcochilus Open Day
– Kulnura, NSW

November 5-6 Tweed Orchid Fair
– Civic Centre Tweed Heads, NSW

December 4 Hills District Orchids
– Summer Open Day
– 183 Windsor Road, Northmead, NSW

AUSTRALIAN ORCHID REVIEW SUBSCRIPTION RENEWAL NOTICES

Please note: Due to the increase in postage costs from 1st January 2016, subscription renewal notices will no longer be sent out, as the subscription expiry date is already printed on the mailing sheet just above the subscriber's name, so please keep an eye out on the mailing sheet for your expiry date.



Dendrobium Warringah

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Email: david@hillsdistrictorchids.com

All other correspondence to:

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Email: sales@australianorchidreview.com.au or

David Banks ☎ 0412 123 036 Email: david@hillsdistrictorchids.com

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Photo: *Phragmipedium Inca Rose 'Alexandra'*
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Nicky's Slippers
Orchid Extras
Orchid Species Plus
Orchids On Newbold
Sims Orchids
Stephen Monkhouse Orchids
The Hanging Garden
Tinonee Orchids
Western Orchid Laboratory

Venue Boxhall Pavilion, KCC Park (State Dog Centre)
655 Westernport Highway, Skye VIC 3977

Times Friday 26 August 9 am – 5 pm
Saturday 27 August 9 am – 5 pm
Sunday 28 August 9 am – 4 pm

Entry Adults \$10 Concession \$9 Children under 15 Free

